



**LG**

Service Manual



**LG**

# **Service Manual**

## **C3380**

Model : C3380



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# Table Of Contents

<b>1. INTRODUCTION .....</b>	<b>5</b>	4.15 Indication LED Trouble .....	92
1.1 Purpose .....	5	4.16 Folder on/off Trouble.....	94
1.2 Regulatory Information.....	5	4.17 Bluetooth Trouble.....	96
1.3 Abbreviations .....	7		
<b>2. PERFORMANCE.....</b>	<b>9</b>		
2.1 H/W Features.....	9	5.1 Download .....	100
2.2 Technical Specification .....	10	5.2 Calibration.....	106
<b>3. TECHNICAL BRIEF .....</b>	<b>16</b>		
3.1 Transceiver .....	16	<b>6. BLOCK DIAGRAM .....</b>	<b>109</b>
3.2 Power Amplifier Module .....	21		
3.3 26 MHz Clock.....	22	<b>7. CIRCUIT DIAGRAM .....</b>	<b>111</b>
3.4 Power Supplies for RF Circuits .....	23		
3.5 Digital Main Processor .....	24	<b>8. PCB LAYOUT .....</b>	<b>117</b>
3.6 Analog Main & Power Management Processor.....	30		
3.7 Display and Interface .....	40	<b>9. ENGINEERING MODE .....</b>	<b>119</b>
3.8 Camera Interface .....	42	9.1 BB Test [MENU 1].....	120
3.9 Keypad Switches and Scanning .....	44	9.2 RF Test [MENU 2].....	122
3.10 Microphone .....	45	9.3 MF mode [MENU 3] .....	122
3.11 Main Speaker.....	45	9.4 Trace option [MENU 4] .....	123
3.12 Headset Interface.....	46	9.5 Call timer [MENU 5] .....	123
3.13 Key Back-light Illumination.....	47	9.6 Fact. Reset [MENU 6] .....	123
3.14 LCD Back-light Illumination.....	48	9.7 S/W version.....	123
3.15 VIBRATOR.....	49		
3.16 BLUETOOTH.....	50		
<b>4. TROUBLE SHOOTING .....</b>	<b>52</b>	<b>10. STAND ALONE TEST .....</b>	<b>124</b>
4.1 RX Trouble.....	52	10.1 Introduction .....	124
4.2 TX Trouble .....	60	10.2 Setting Method.....	124
4.3 Power On Trouble .....	68	10.3 Means of Test .....	125
4.4 Charging Trouble .....	70		
4.5 Vibrator Trouble .....	72	<b>11. AUTO CALIBRATION.....</b>	<b>127</b>
4.6 LCD Trouble.....	74	11.1 Overview .....	127
4.7 Camera Trouble .....	76	11.2 Requirements.....	127
4.8 Speaker Trouble .....	78	11.3 Menu and Settings.....	127
4.9 SIM Card Interface Trouble.....	80	11.4 AGC .....	129
4.10 Earphone Trouble .....	82	11.5 APC.....	129
4.11 KEY backlight Trouble .....	84	11.6 ADC .....	129
4.12 Receiver Trouble .....	86	11.7 Setting.....	129
4.13 Microphone Trouble .....	88	11.8 How to do calibration .....	129
4.14 RTC Trouble .....	90		
		<b>12. EXPLODED VIEW &amp; REPLACEMENT PART LIST .....</b>	<b>131</b>
		12.1 Exploded View .....	131
		12.2 Replacement Parts .....	133
		12.3 Accessory .....	150



# **1. INTRODUCTION**

## **1.1 Purpose**

This manual provides the information necessary to repair, calibration, description and download the features of this model.

## **1.2 Regulatory Information**

### **A. Security**

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

### **B. Incidence of Harm**

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### **C. Changes in Service**

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### **D. Maintenance Limitations**

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alterations or repair may affect the regulatory status of the system and may void any remaining warranty.

## **1. INTRODUCTION**

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### **E. Notice of Radiated Emissions**

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

### **F. Pictures**

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

### **G. Interference and Attenuation**

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from un suppressed engines or electric motors may cause problems.

### **H. Electrostatic Sensitive Devices**

#### **ATTENTION**

**Boards, which contain Electrostatic Sensitive Device (ESD), are indicated  by the sign.**

**Following information is ESD handling:**

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

# 1. INTRODUCTION

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## 1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

## 1. INTRODUCTION

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PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

## 2. PERFORMANCE

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## 2. PERFORMANCE

### 2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-ion, 1000mAh Battery Size : 34.15 (W) × 53.55(H) × 5.7(T) [mm] Battery Weight : 25g	
Stand by Current	Under the minimum current consumption environment (such as paging period 9), the level of standby current is below 4mA.	
Talk time	Up to 3.5 hours (GSM TX Level 5)	
Stand by time	Up to 200 hours (Paging Period: 9, RSSI: -85 dBm)	
Charging time	Approx. Under 3.75 hours	
RX Sensitivity	GSM, EGSM: -107dBm, DCS: -107dBm	
TX output power	GSM, EGSM: 33dBm(Level 5), DCS: 30dBm(Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small	
Display	Main LCD : CSTN 128 x 160 pixel 65K Color Sub LCD : STN 96 x 64 pixel MONO Color	
Status Indicator	Hard icons. Key Pad 0 ~ 9, #, *, Up/Down Navigation Key Menu Key, Clear Key Send Key, END/PWR Key Soft Key(Left/Right)	
ANT	Internal	
EAR Phone Jack	Yes (mono)	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Yes	
Microphone	Yes	
Speaker/Receiver	One way dual speaker	
Travel Adapter	Yes	
MIDI	40 Poly (Mono SPK)	
Options	Data Kit , CD	

## 2. PERFORMANCE

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### 2.2 Technical Specification

Item	Description	Specification					
1	Frequency Band	<b>GSM</b> <ul style="list-style-type: none"> <li>TX: <math>890 + n \times 0.2</math> MHz</li> <li>RX: <math>935 + n \times 0.2</math> MHz (<math>n=1 \sim 124</math>)</li> </ul> <b>EGSM</b> <ul style="list-style-type: none"> <li>TX: <math>890 + (n-1024) \times 0.2</math> MHz</li> <li>RX: <math>935 + (n-1024) \times 0.2</math> MHz (<math>n=975 \sim 1024</math>)</li> </ul> <b>DCS</b> <ul style="list-style-type: none"> <li>TX: <math>1710 + (n-512) \times 0.2</math> MHz</li> <li>RX: <math>1805 + (n-512) \times 0.2</math> MHz (<math>n=512 \sim 885</math>)</li> </ul>					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1 ppm					
4	Power Level	<b>GSM, EGSM</b>					
		Level	Power	Toler.	Level	Power	Toler.
		5	33 dBm	$\pm 2$ dB	13	17 dBm	$\pm 3$ dB
		6	31 dBm	$\pm 3$ dB	14	15 dBm	$\pm 3$ dB
		7	29 dBm	$\pm 3$ dB	15	13 dBm	$\pm 3$ dB
		8	27 dBm	$\pm 3$ dB	16	11 dBm	$\pm 5$ dB
		9	25 dBm	$\pm 3$ dB	17	9 dBm	$\pm 5$ dB
		10	23 dBm	$\pm 3$ dB	18	7 dBm	$\pm 5$ dB
		11	21 dBm	$\pm 3$ dB	19	5 dBm	$\pm 5$ dB
		12	19 dBm	$\pm 3$ dB			
		<b>DCS</b>					
		Level	Power	Toler.	Level	Power	Toler.
		0	30 dBm	$\pm 2$ dB	8	14 dBm	$\pm 3$ dB
		1	28 dBm	$\pm 3$ dB	9	12 dBm	$\pm 4$ dB
		2	26 dBm	$\pm 3$ dB	10	10 dBm	$\pm 4$ dB
		3	24 dBm	$\pm 3$ dB	11	8 dBm	$\pm 4$ dB
		4	22 dBm	$\pm 3$ dB	12	6 dBm	$\pm 4$ dB
		5	20 dBm	$\pm 3$ dB	13	4 dBm	$\pm 4$ dB
		6	18 dBm	$\pm 3$ dB	14	2 dBm	$\pm 5$ dB
		7	16 dBm	$\pm 3$ dB	15	0 dBm	$\pm 5$ dB

## 2. PERFORMANCE

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Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	<b>GSM, EGSM</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600 ~ 1,200	-60
		1,200 ~ 1,800	-60
		1,800 ~ 3,000	-63
		3,000 ~ 6,000	-65
		6,000	-71
		<b>DCS</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
6	Output RF Spectrum (due to switching transient)	200	-30
		250	-33
		400	-60
		600 ~ 1,200	-60
		1,200 ~ 1,800	-60
		1,800 ~ 3,000	-65
		3,000 ~ 6,000	-65
		6,000	-73
		<b>GSM, EGSM</b>	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

## 2. PERFORMANCE

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Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	<b>DCS</b>		
		Offset from Carrier (kHz).		
		Max. (dBm)		
		400 -22		
		600 -24		
		1,200 -24		
7	Spurious Emissions	Conduction, Emission Status		
8	Bit Error Ratio	<b>GSM, EGSM</b> BER (Class II) < 2.439% @ -102 dBm		
		<b>DCS</b> BER (Class II) < 2.439% @ -100 dBm		
9	RX Level Report Accuracy	±3 dB		
10	SLR	8 ±3 dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	2 ±3 dB		
13	Receiving Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		

## 2. PERFORMANCE

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<b>Item</b>	<b>Description</b>	<b>Specification</b>	
14	STMR	$13 \pm 5$ dB	
15	Stability Margin	$> 6$ dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	System frequency (13 MHz) tolerance	$\leq 2.5$ ppm	
19	32.768KHz tolerance	$\leq 30$ ppm	
20	Ringer Volume	At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
21	Charge Current	Fast Charge : < 430 mA Slow Charge: < 160 mA	
22	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~-105 dBm
23	Battery Indicator	Battery Bar Number	Voltage
		0	3.51V~3.61V
		1	3.62V~3.69V
		2	3.70V~3.77V
		3	3.78V~3.91V
		4	3.92V~
24	Low Voltage Warning	$3.62 \pm 0.03$ V (Call)	
		$3.50 \pm 0.03$ V (Standby)	

## 2. PERFORMANCE

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Item	Description	Specification
25	Forced shut down Voltage	$3.35 \pm 0.03$ V
26	Battery Type	1 Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 1000mAh
27	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 5.2V, 800mA

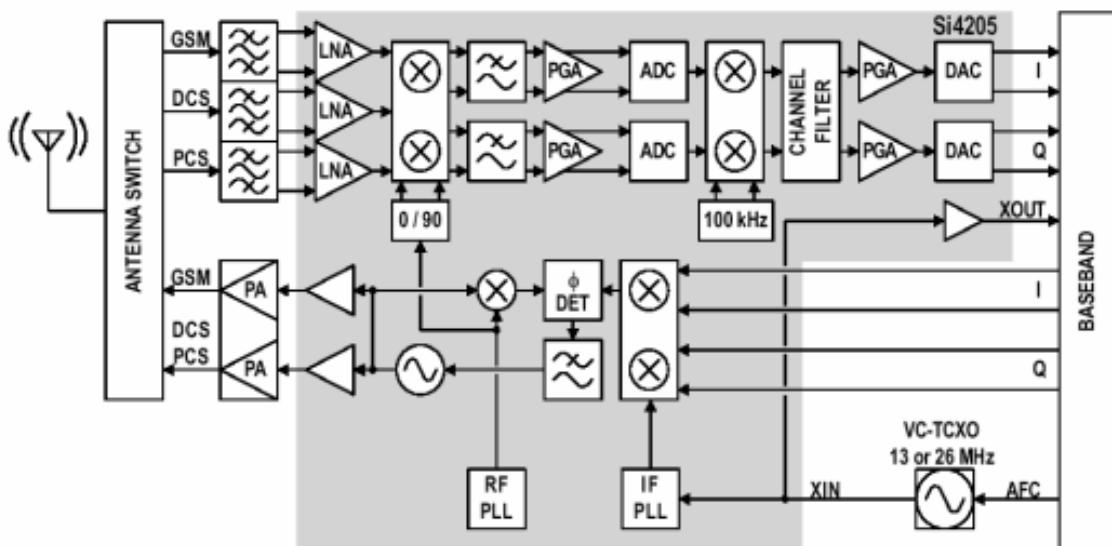
## 3. TECHNICAL BRIEF

### 3.1 Transceiver (Si4205, U505)

The RF parts consist of a transmitter part, a receiver part, a frequency synthesizer part, a voltage supply part, and a VCTCXO part.

The Aero I transceiver is the integrated RF front end for multi-band GSM/GPRS digital cellular handsets and wireless data modems. The integrated solution eliminates the IF SAW filter, external low noise amplifier (LNA) for three bands, transmit and RF voltage controlled oscillator (VCO) modules, and other discrete components found in conventional designs.

**Figure. 3-1 RECEIVER FUNCTIONAL BLOCK DIAGRAM**



### 3. TECHNICAL BRIEF

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#### (1) Receiver Part

The Aero I transceiver uses a low-IF receiver architecture which allows for the on chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional super-heterodyne architectures.

##### A. RF front end

RF front end consists of Antenna Switch(FL500), two SAW Filters(FL401, FL402) and dual band LNAs integrated in transceiver (U505).

The Received RF signals(GSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz) are fed into the antenna or Mobile switch.

The Antenna Switch(FL500) is used to control the Rx and Tx paths. And, the input signals VC1 and VC2 of a FL500 are directly connected to baseband controller to switch either Tx or Rx path on. The logic and current is given below Table 3-1.

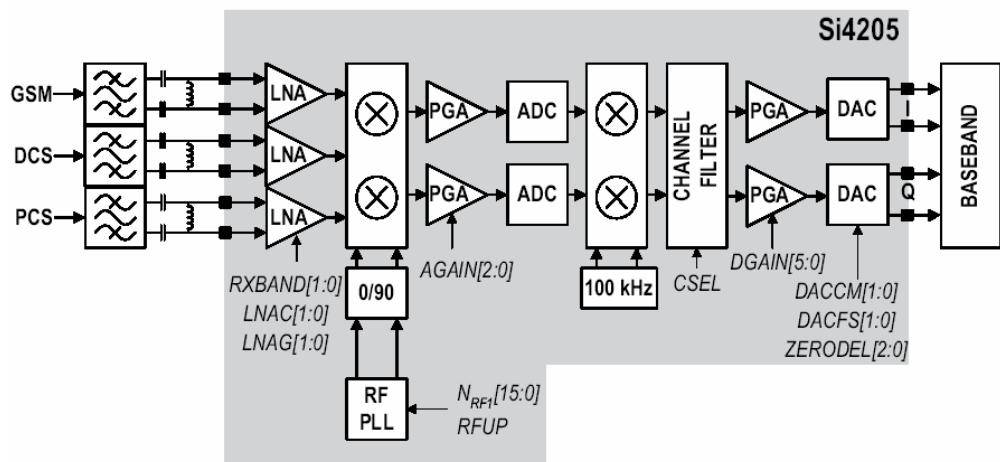
**Table 3-1 THE LOGIC AND CURRENT**

	<b>VC1</b>	<b>VC2</b>	<b>Current</b>
DCS Tx	0 V	2.5 ~ 3.0 V	10.0 mA max
GSM Tx	2.5 ~ 3.0 V	0 V	10.0 mA max
GSM / DCS Rx	0 V	0 V	< 0.1 mA

Three differential-input LNAs are integrated in SI4205. The GSM input supports the GSM 850 (824-849 MHz) or E-GSM 900 (925-960MHz) bands. The DCS input supports the DCS 1800 (1805-1880 MHz) band. The PCS input supports the PCS 1900 (1930-1990 MHz) band.

The LNA inputs are matched to the 150 balanced output SAW filters through external LC matching networks. The LNA gain is controlled with the LNAG[1:0] and LNAC[1:0] bits in register 05h (Figure 3-2).

**Figure. 3-2 SI4205 RECEIVER PART**



#### B. Intermediate frequency (IF) and Demodulation

A quadrature image-reject mixer downconverts the RF signal to a 100KHz intermediate frequency (IF) with the RFLO from the frequency synthesizer. The RFLO frequency is between 1737.8 to 1989.9 MHz, and is internally divided by 2 for GSM 850 and E-GSM 900 modes. The mixer output is amplified with an analog programmable gain amplifier (PGA), which is controlled with the AGAIN[2:0] bits in register 05h (Figure3-2). The quadrature IF signal is digitized with high resolution A/D converters (ADCs).

The ADC output is downconverted to baseband with a digital 100KHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The selectivity setting (CSEL=0) or a low selectivity setting (CSEL=1). The low selectivity filter has a flatter group channelization filter is in the baseband chip. After channel selection, the digital output is scaled with a digital PGA, which is controlled with the DGAIN [5:0] bits in register 05h.

The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP,RXIN,RXQP and RXQN pins to interface to standard analog ADC input baseband ICs. No special processing is required in the baseband for offset compensation or extended dynamic range.

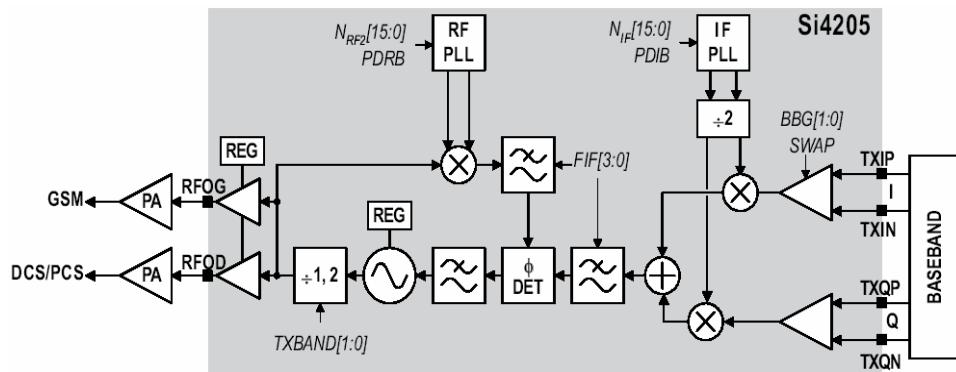
Compared to a direct-conversion architecture, the low-IF architecture has a much greater degree of immunity to dc offsets that can arise from RF local oscillator(RFLO) self-mixing, 2nd order distortion of blockers, and device 1/f noise.

### 3. TECHNICAL BRIEF

#### (2) Transmitter Part

The transmit (Tx) section consists of an I/Q baseband upconverter, and offset phase-locked loop (OPLL) and two output buffers that can drive external power amplifiers (PA), one for the GSM 850 (824-849 MHz) and E-GSM 900 (880-915 MHz) bands and one for the DCS 1800 (1710-1785 MHz) and PCS 1900 (1850-1910MHz) bands.

**Figure. 3-3 SI4205 TRANSMITTER PART**



#### A. IF Modulator

The baseband converter(BBC) within the GSM chipset generates I and Q baseband signals for the Transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted sideband rejection and produces a GMSK modulated signal. The baseband software is able to cancel out differential DC offsets in the I/Q baseband signals caused by imperfections in the D/A converters. The Tx-Modulator implements a quadrature modulator. A quadrature mixer upconverts the differential in-phase (TXIP, TXIN) and quadrature (TXQP, TXQN) signals with the IFLO to generate a SSB IF signal that is filtered and used as the reference input to the OPLL.

The IFLO frequency is generated between 766 and 896 MHz and internally divided by 2 to generate the quadrature LO signals for the quadrature modulator, resulting in an IF between 383 and 448 MHz. For the E-GSM 900 band, two different IFLO frequencies are required for spur management. Therefore, the IF PLL must be programmed per channel in the E-GSM 900 band.

### 3. TECHNICAL BRIEF

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#### B. OPLL

The OPLL consists of a feedback mixer, a phase detector, a loop filter, and a fully integrated TXVCO. The TXVCO is centered between the DCS 1800 and PCS 1900 bands, and its output is divided by 2 for the GSM 850 and E-GSM 900 bands. The RFLO frequency is generated between 1272 and 1483 MHz. To allow a single VCO to be used for the RFLO, high-side injection is used for the GSM 850 and E-GSM 900 bands, and low-side injection is used for the DCS 1800 and PCS 1900 bands. The I and Q signals are automatically swapped when switching bands. Additionally, the SWAP bit in register 03h can be used to manually exchange the I and Q signals.

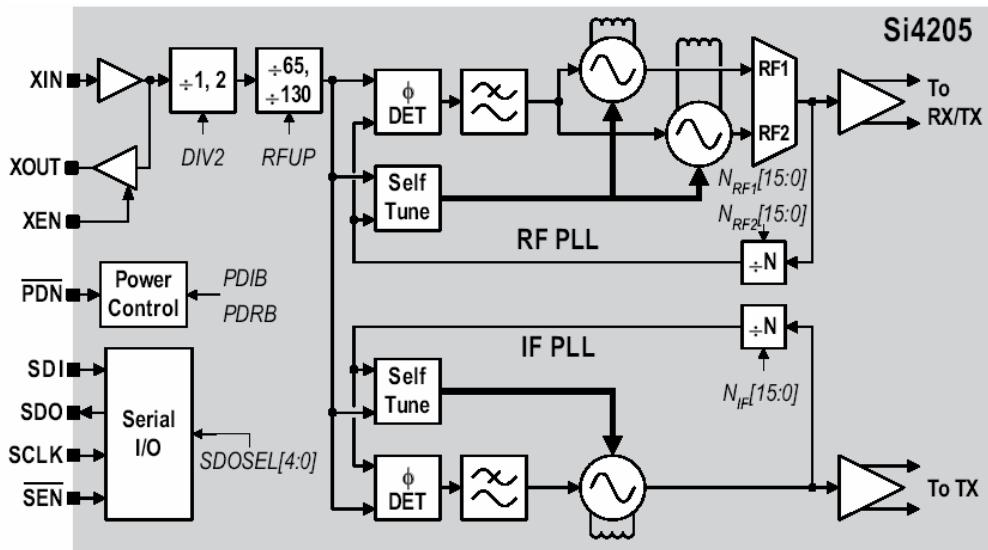
Low-pass filters before the OPLL phase detector reduce the harmonic content of the quadrature modulator and feedback mixer outputs. The cutoff frequency of the filters is programmable with the FIF[3:0] bits in register 04h (Figure 3-3), and should be set to the recommended settings detailed in the register description.

### 3. TECHNICAL BRIEF

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#### (3) Frequency Synthesizer

**Figure. 3-4 SI4205 FREQUENCY SYNTHESIZER PART**



The Aero I transceiver integrates two complete PLLs including VCOs, varactors, resonators, loop filters, reference and VCO dividers, and phase detectors. The RF PLL uses two multiplexed VCOs. The RF1 VCO is used for receive mode, and the RF2 VCO is used for transmit mode. The IF PLL is used only during transmit mode. All VCO tuning inductors are also integrated. The IF and RF output frequencies are set by programming the N-Divider registers, NRF1, NRF2 and NIF. Programming the N-Divider register for either RF1 or RF2 automatically selects the proper VCO. The output frequency of each PLL is as follows:

$$f_{\text{out}} = N \times f_o$$

The DIV2 bit in register 31h controls a programmable divider at the XIN pin to allow either a 13 or 26 MHz reference frequency. For receive mode, the RF1 PLL phase detector update rate ( $f_o$ ) should be programmed  $f_o = 100$  kHz for DCS 1800 or PCS 1900 bands, and  $f_o = 200$  kHz for GSM 850 and E-GSM 900 bands. For transmit mode, the RF2 and IF PLL phase detector update rates are always  $f_o=200$  kHz.

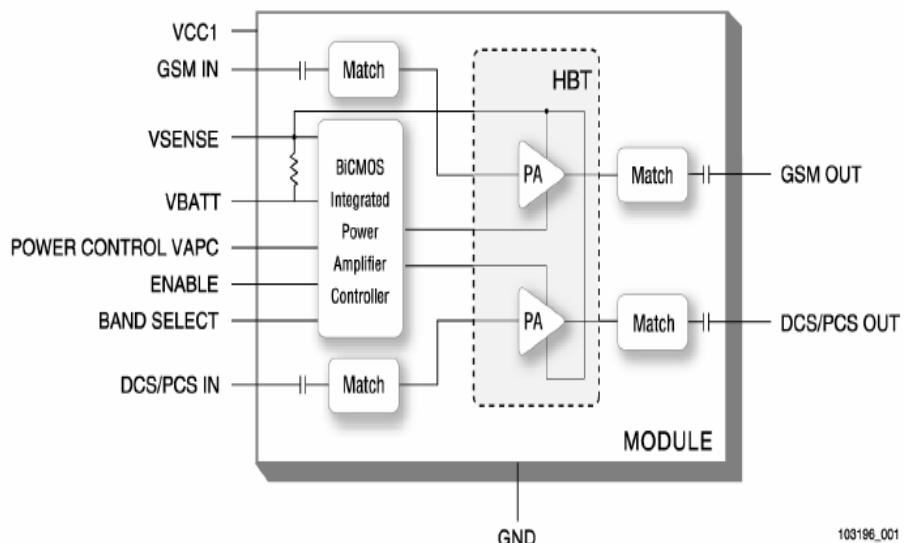
## 3.2 Power Amplifier Module (SKY77325, U501)

The SKY77325 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation. The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of separate GSM850/900 PA and DCS1800/PCS1900 PA blocks, impedance-matching circuitry for 50 input and output impedances, and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM850/900 bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

RF input and output ports of the SKY77325 are internally matched to a 50 load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5 A, typical) of the dual PA module maximizes handset standby time. The SKY77325 also contains band-select switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In Figure 3-5 below, the BS pin selects the PA output (DCS/PCS OUT or GSM850/900 OUT) and the Analog Power Control (VAPC) controls the level of output power.

VBATT and VSENSE pins connect to an internal current-sense resistor and interface to an integrated power amplifier control (iPAC<sub>c</sub>) function, which is insensitive to variations in temperature, power supply, process, and input power. The ENABLE input allows initial turnon of PAM circuitry to minimize battery drain



103196\_001

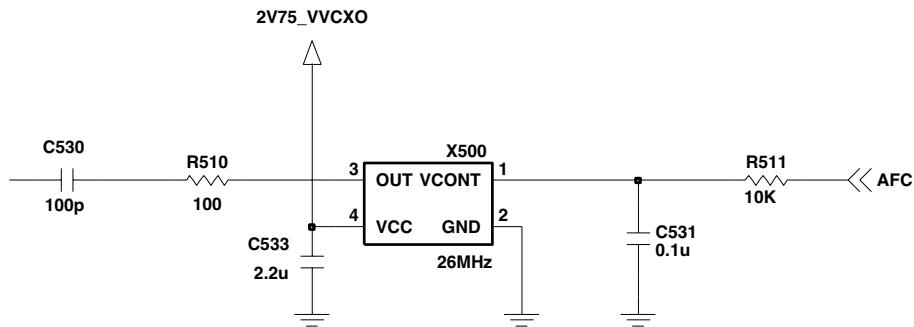
**3-5 Functional Block Diagram**

### 3. TECHNICAL BRIEF

#### 3.3 26 MHz Clock (VCTCXO, X500)

The 26 MHz clock(X500) consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 26 MHz. It is used within the Si4205, digital base band chipset (U101, AD6527)

**Figure 3-6 VCTCXO CIRCUIT DIAGRAM**



#### 3.4 Power Supplies for RF Circuits (RF LDO, U503)

Two regulators are used for RF circuits. One is MIC5255 (U503), and the other is one port of AD6537B (U102).

MIC5255 (U503) supplies power to transceiver (SI4205, U505). One port of AD6537B supplies power to VCTCXO (X500). Main power (VBAT) from battery is used for PAM (SKY77325, U501) because PAM requires high power.

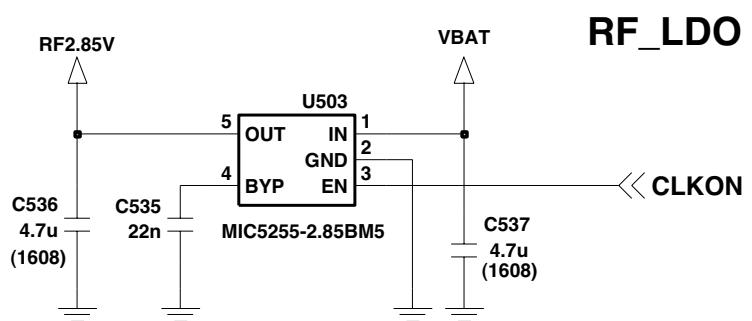
**Table 3-2 RF POWER SUPPLIERS**

Supplier	Voltage	Powers	enabled signal
U503(VRF)	2.85 V	U505, U501	CLKON
U102(VVCXO)	2.75 V	X501	
Battery(VBAT)	3.4 ~ 4.2 V	U501, U503	

### 3. TECHNICAL BRIEF

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**Figure 3-7 RF LDO CIRCUIT DIAGRAM**

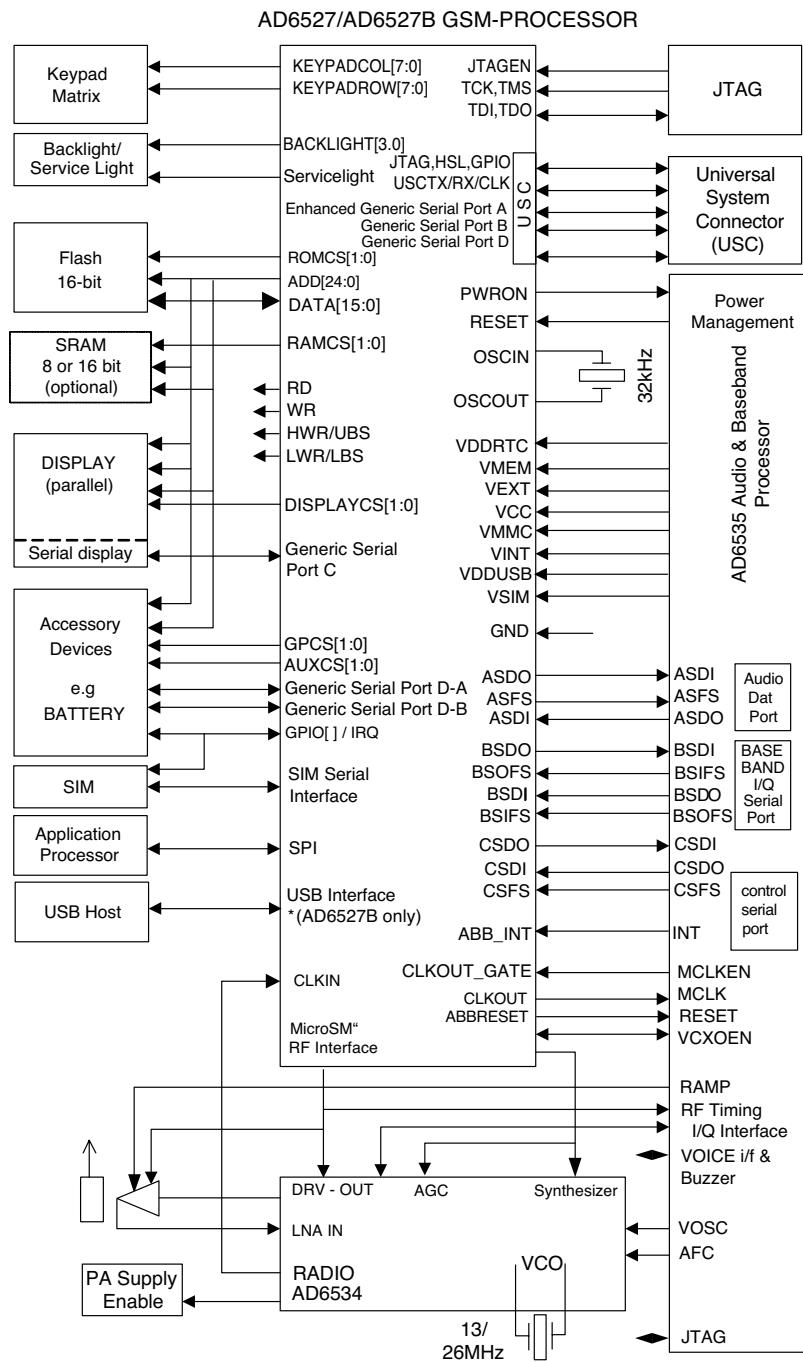


### 3. TECHNICAL BRIEF

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#### 3.5 Digital Main Processor (AD6527, U101)

**Figure 3-8. SYSTEM INTERCONNECTION OF AD6527 EXTERNAL INTERFACE**



### **3. TECHNICAL BRIEF**

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- AD6527 is an ADI designed processor.
- AD6527 consists of
  - 1. Control Processor Subsystem
    - 32-bit ARM7TDMI Control Processor
    - 58.5 MHz operation at 1.7V
    - On-board 16KB instruction/Data Cache
    - 1 Mbits of on-chip System SRAM
  - 2. DSP Subsystem
    - 16-bit Fixed Point DSP Processor
    - 91 MIPS at 1.7V
    - 16K word Data and 16K word Program SRAM
    - 4K word Program Instruction Cache
    - Architecture supports Full Rate, Enhanced Full Rate, Half Rate, and AMR Speech Encoding/Decoding Algorithms
  - 3. Peripheral Subsystem
    - Shared on-chip peripheral and off-chip interface:
    - Support for Burst and Page Mode Flash
    - Support for Pseudo SRAM
    - Ciphering module for GPRS supporting GAE1 and GAE2 encryption algorithms
    - Parallel and Serial Display Interface
    - 8 x 8 Keypad Interface
    - Four independent programmable backlight plus One Service Light
    - 1.8V and 3.0V, 64 kbps SIM interface
    - Universal System Connector Interface
    - Slow, Medium and Fast IrDA transceiver interface
    - Enhanced Generic Serial Port
    - Dedicated SPI interface
    - Thumbwheel Interface
    - JTAG Interface for Test and In-Circuit Emulation
  - 4. Other
    - Supports 13 MHz and 26 MHz Input Clocks
    - 1.8V Typical Core Operating Voltages
    - 204-Ball LFBGA(mini-BGA) Package
  - 5. Applications
    - GSM900/DCS1800/PCS1900/GSM850 Wireless Terminals
    - GSM Phase 2+ Compliant
    - GPRS Class 12 Compliant
    - Multimedia Services(MMS)
    - Extended Messaging System(EMS)

### 3. TECHNICAL BRIEF

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#### 3.5.1 Interconnection with external devices

##### A. RTC block interface

Countered by external X-TAL  
The X-TAL oscillates 32.768KHz

##### B. LCD module interface

The LCD module is controlled by CAMERA IC, CL761A  
If CL761A is in the state of by-pass mode, the LCD control signals from AD6527 are by-passed through CL761A.  
In operating mode, the CL761A controls the LCD module through L\_MAIN\_LCD\_CS, L\_SUBLCD\_CS, LCD\_RESET, LCD\_RS, LCD\_WR, LCD\_RD, L\_DATA[15-00], 2V85\_VCAM, IF\_MODE, LCD\_ID[1:3].

**Table 3-3. LCD CONTRON SIGNALS DISCRIPTION**

Signals	Description
L_MAIN_LCD_CS	MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
L_SUBMLCD_CS	SUB LCD driver chip enable. SUB LCD driver IC has own CS pin
LCD_RESET (GPIO 15)	This pin resets LCD module. This signal comes from DBB directly.
LCD_WR	Enable writing to LCD Driver.
LCD_RD	Enable reading to LCD Driver.
LCD_RS	This pin determines whether the data to LCD module are display data or control data. LCD_RS can select 16 bit parallel bus.
2V85_VCAM	2.85V voltage is supplied to LCD driver IC.
IF_MODE (GPO_8)	Select 16bits or 8bits interface mode for MAIN LCD. For the future
LCD_ID1 (AUXADC1 in ABB)	Select LCD modoule maker(2.4V : SII, 0V : HyeLCD)
LCD_ID2(GPIO_16) LCD_ID3(GPIO_17)	For the future.

### 3. TECHNICAL BRIEF

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The backlight of LCD module is controlled by DBB via AAT2807 , U402. The control signals related to Backlight LED are given bellow.

**Table 3-4. DESCRIPTION OF LCD BACKLIGHT LED CONTROL**

Signals	Description
C_FLASH (GPIO_24)	Control flash ON and OFF
LCD_DIM_CTL (GPO 23)	Control LCD backlight level in 16 steps
FLASH_LED	Voltage source for FLASH LED
MLED	Current source for backlight LED
MLED[1:3]	This pins are returned-paths for backlight LED current source (MLED)

#### **C. RF interface**

The AD6527 control RF parts through PA\_BAND, ANT\_SW1, ANT\_SW2, CLKON , PA\_EN, SEN, SDATA, SCLK, RF\_PWR\_DWN.

**Table 3-5. RF CONTRON SIGNALS DISCRIPTION**

Signals	Description
PA_BAND (GPO 17)	PAM Band Select
ANT_SW1 (GPO 9)	Antenna switch Band Select
ANT_SW2 (GPO 11)	Antenna switch Band Select
CLKON	RF LDO Enable/Disable
PA_EN (GPO 16)	PAM Enable/Disable
SEN (GPO 19)	PLL Enable/Disable
SDATA (GPO 20)	Serial Data to PLL
SCLK (GPO 21)	Clock to PLL
RF_EN (GPO 4)	Power down Input

### 3. TECHNICAL BRIEF

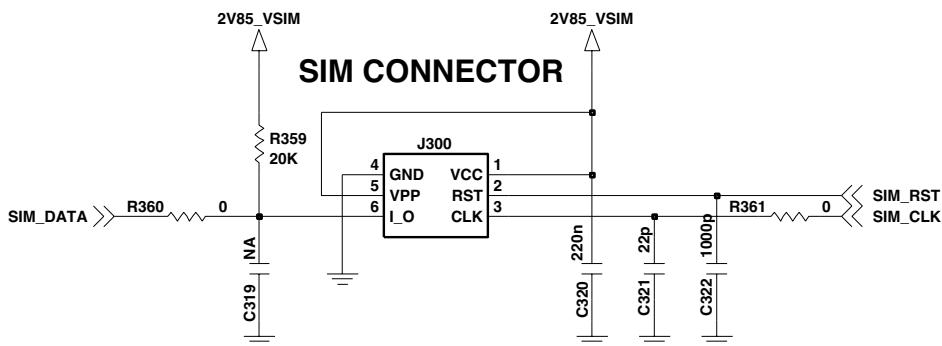
#### D. SIM interface

The AD6527 provides SIM Interface Module. The AD6527 checks status periodically during established call mode whether SIM card is inserted or not, but it doesn't check during deep Sleep mode. In order to communicate with SIM card, 3 signals such as SIM\_DATA, SIM\_CLK, SIM\_RST(GPIO\_23) are required. The descriptions about the signals are given by bellow Table 3-6 in detail.

**Table 3-6. SIM CONTRON SIGNALS DISCRIPTION**

Signals	Description
SIM_DATA	This pin receives and sends data to SIM card. This model can support 1.8volt and 3.0 volt interface SIM card.
SIM_CLK	Clock 3.25MHz frequency.
SIM_RST (GPIO_23)	Reset SIM block

**Figure 3-9. SIM Interface of AD6527**



#### E. Key interface

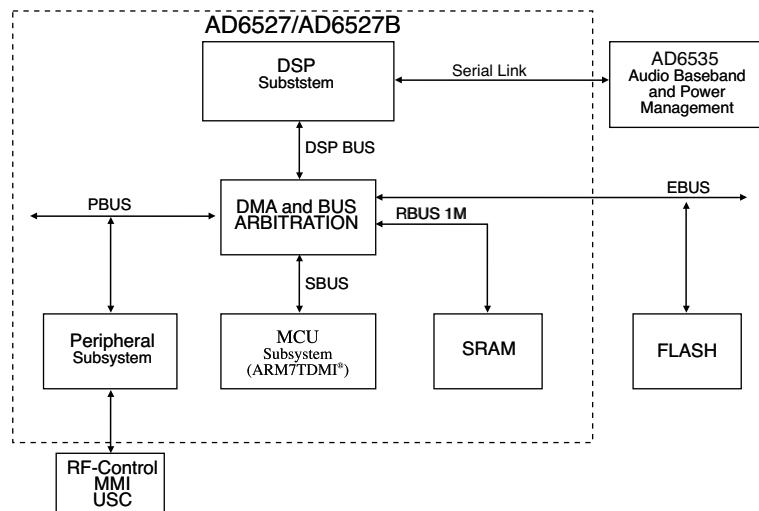
Include 5 column , 5 row and additional GPIO 35 for KEY\_ROW5. The AD6527 detects whether key is pressed or not by using interrupt method.

#### F. AD6537B Interrupt

AD6537B provides an active-high interrupt output signal. Interrupt signals are generated by the Auxiliary ADC, audio, and charger modules.

#### 3.5.2 AD6527 Architecture

Figure 3-10. AD6527 Architecture



The internal architecture of AD6527 is shown above Figure 3-10. AD6527 regroups three main subsystems connected together through a dynamic and flexible communication bus network. It also includes onboard system RAM (SRAM) and interfaces with external Flash Memory, Baseband converter functions, and terminal functions like MMI, SIM and Universal System Connector (USC).

The Digital Signal Processing (DSP) subsystem primarily hosts all the speech processing, channel equalization and channel codec functions. The code used to implement such functions can be stored in external Flash Memory and dynamically downloaded on demand into the DSP's program RAM and Instruction Cache.

The micro-controller subsystem supports all the GSM terminal software, including the layer 1, 2 and 3 of the GSM protocol stack, the MMI, and applications software such as data services, test and maintenance. It is tightly associated with on-chip system SRAM and also includes boot ROM memory with a small dedicated routine to facilitate the initialization of the external Flash Memory via code download using the on-chip serial interface to the external Flash Memory interface.

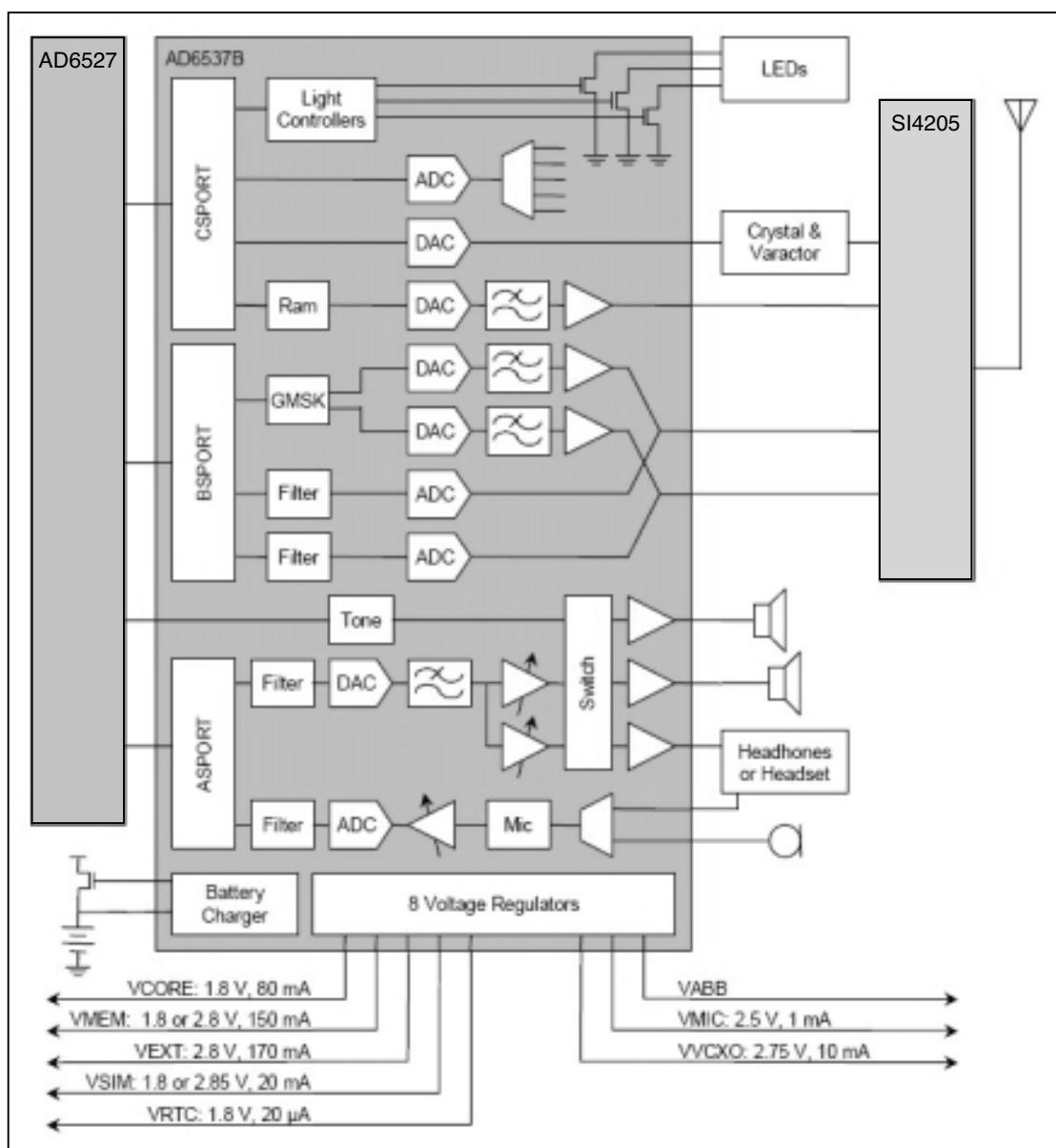
The peripheral subsystem is composed of system peripherals such as interrupt controller, real time clock, watch dog timer, power management and a timing and control module. It also includes peripheral interfaces to the terminal functions: keyboard, battery supervision, radio and display. Both the DSP and the MCU can access the peripheral subsystem via the peripheral bus (PBUS).

For program and data storage, both the MCU subsystem and the DSP subsystem can access the on chip system SRAM and external memory such Flash Memory. The access to the SRAM module is made through the RAM Bus (RBUS) under the control of the bus arbitration logic. Similarly, access to the Flash Memory is through the parallel External Bus (EBUS).

### 3. TECHNICAL BRIEF

#### 3.6 Analog Main & Power Management Processor (AD6537B, U102)

Figure 3-11. AD6537B FUNCTIONAL BLOCK DIAGRAM



### **3. TECHNICAL BRIEF**

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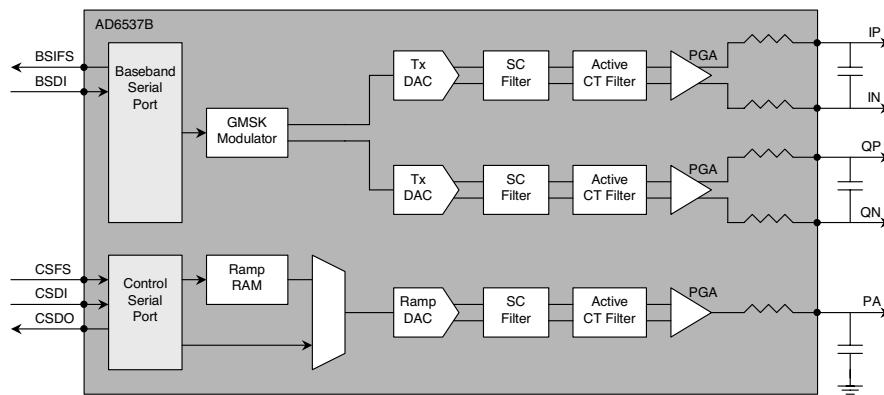
- AD6537B is an ADI designed Analog Baseband processor. AD6537B covers the processing GMSK modulation interface, Aux ADC, Voice signal processing and Power Management.
- AD6537B consists of
  - 1. BB Transmit section
    - GMSK Modulation
    - I-channel & Q-channel Transmit DACs and Filters
    - Power Ramping DAC
  - 2. BB Receiver section
    - I-channel & Q-channel Receive ADCs and Filters
  - 3. Auxiliary section
    - Voltage Reference
    - Automatic Frequency Control DAC
    - Auxiliary ADC
    - Light Controllers
  - 4. Audio Section
    - 8 kHz & 16 kHz Voiceband Codec
    - 48 kHz Monophonic DAC
    - Power Amplifiers
  - 5. Power Management section
    - Voltage Regulators
    - Battery Charger
    - Battery Protection
  - 6. Digital Processor section
    - Control, Baseband, and Audio Serial Ports
    - Interrupt Logic

### 3. TECHNICAL BRIEF

#### 3.6.1 Baseband Transmit Section

1. The AD6537B Baseband Transmit Section is designed to support GMSK for both single-slot and multi-slot application.
2. The transmit channel consists of a digital GMSK modulator, a matched pair of 10-bit DACs and a matched pair of reconstruction filter.

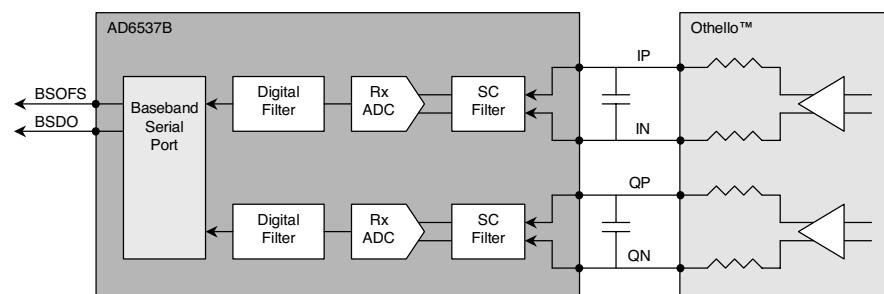
**Figure 3-12. AD6537B BASEBAND TRANSMIT SECTION**



#### 3.6.2 Baseband Transmit Section

1. This section consists of two identical ADC channels that process baseband in-phase(I) and quadrature(Q) input signals.

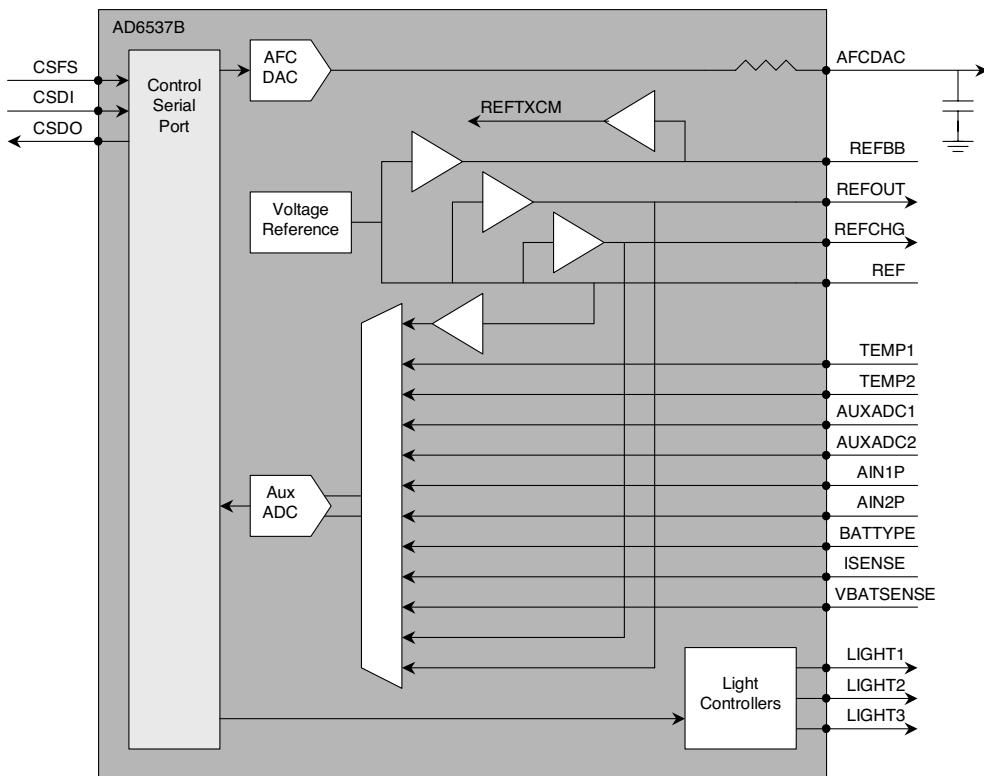
**Figure 3-13. AD6537B BASEBAND RECEIVER SECTION**



#### 3.6.3 Auxiliary Section

1. This section includes an Automatic Frequency Control(AFC) DAC, voltage reference buffers, an Auxiliary ADC, and light controllers.
  - AFC DAC: 13 bits
  
2. This section also contains AUX ADC and Voltage Reference
  - IDAC: 10 bits
  - The Auxiliary ADC provides :
    - Two differential inputs for temperature sensing.
    - A differential input for the battery charger current sensor

**Figure 3-14. AD6537B AUXILIARY SECTION**



### 3. TECHNICAL BRIEF

#### 3.6.4 Audio Section

1. Receive audio signal from microphone. This model uses differential configuration.
2. Send audio signal to speaker. This model uses differential configuration.
3. This section provides an audio codec with a digital-to-analog converter and an analog-to-digital converter, a ring tone volume controller, a microphone interface, and multiple analog input and output channels.
4. It interconnects with external devices like main microphone, main receiver, and headset.

The descriptions of audio port used in This model are given below in detail.

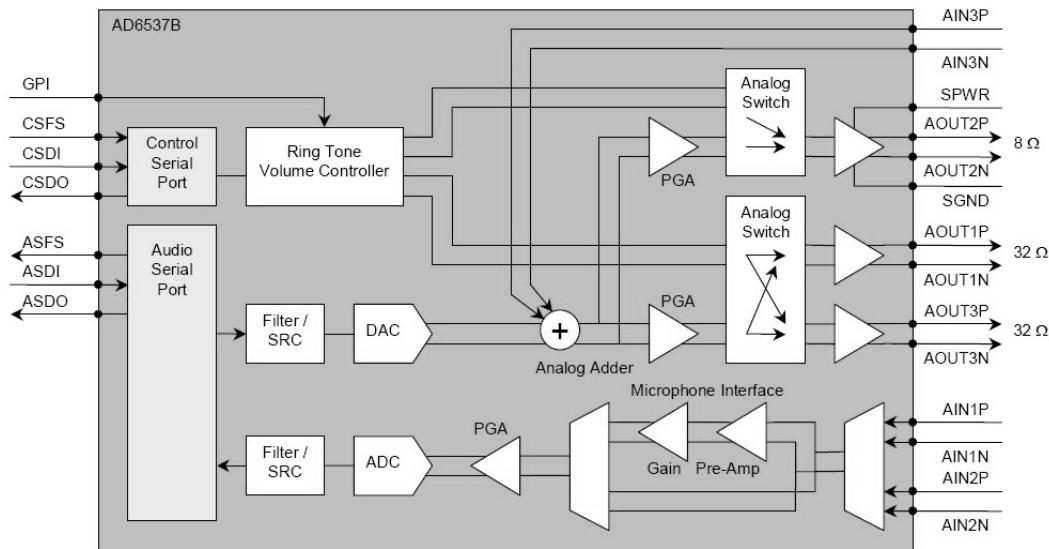
<Up Link>

- AIN1P, AIN1N : Main microphone positive/negative terminal
- AIN2P, AIN2N : Headset microphone positive/negative terminal
- AIN3P, AIN3N : External Analog Input terminal

<Down Link>

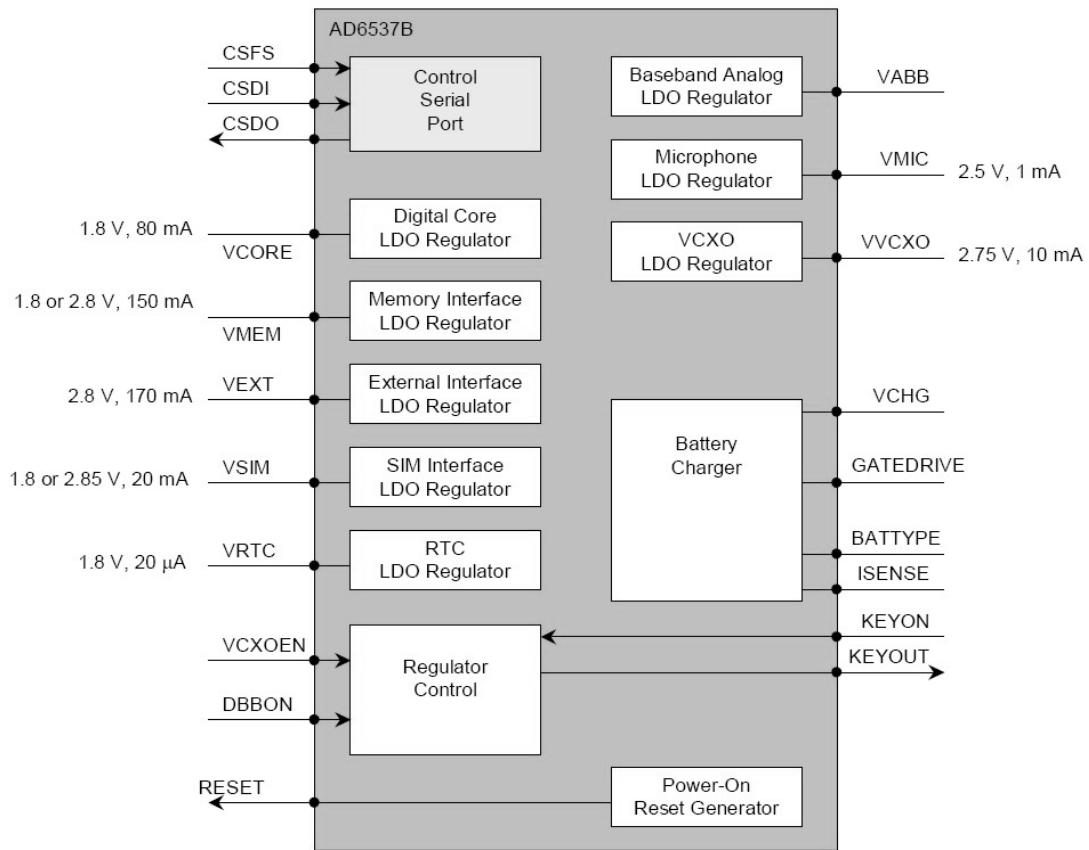
- AOUT1P, AOUT1N : Main Speaker positive/negative terminal
- AOUT3P : Headset speaker terminal

**Figure 3-15. AD6537B AUDIO SECTION**



#### 3.6.5 Power Management

**Figure 3-16. AD6537B POWER MANAGEMENT SECTION**



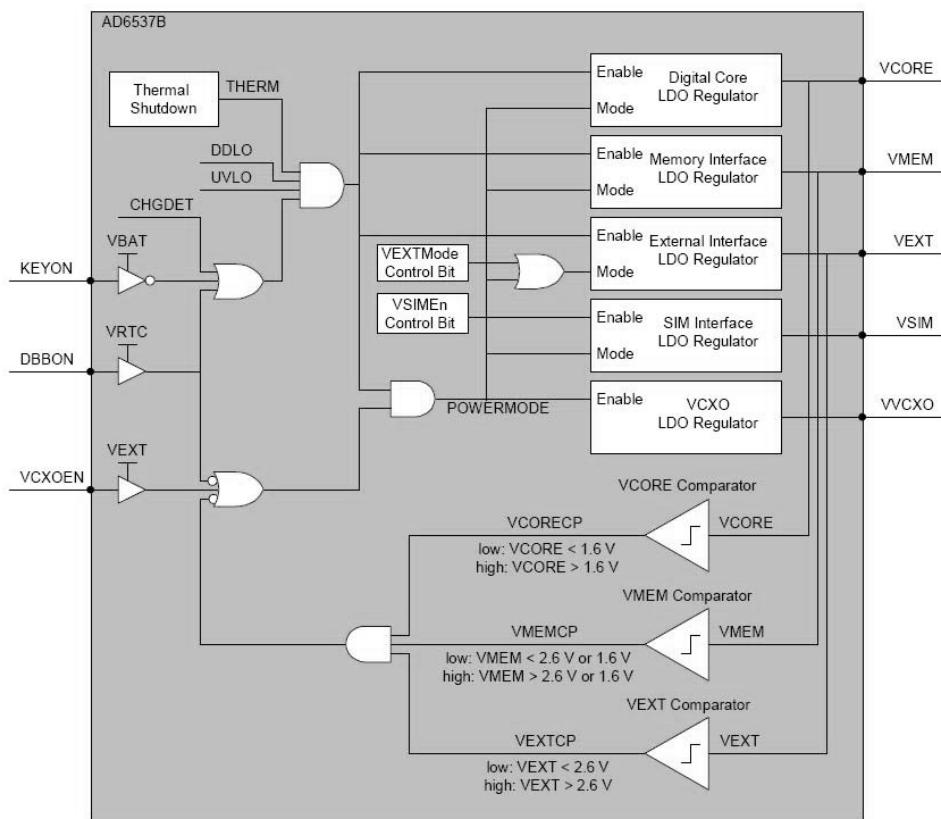
##### 1. Power up sequence logic

1. The AD6537B controls power on sequence
2. Power on sequence
  - If a battery is inserted, the battery powers the 8 LDOs.
  - Then if PWRONKEY is detected, the LDOs output is turned on.
  - REFOUT is also enabled
  - Reset is generated and send to the AD6527

### 3. TECHNICAL BRIEF

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**Figure 3-17. AD6537B POWER MODE LOGIC**



## 2. LDO Block

1. There are 8 LDOs in the AD6537B.
  - VCORE : supplies Digital baseband Processor core and AD6537B digital core (1.8V, 80mA)
  - VMEM : supplies external memory and the interface to the external memory on the digital baseband processor (1.8V or 2.8V, 150mA)
  - VEXT : supplies Radio digital interface and high voltage interface (2.8V, 170mA)
  - VSIM : supplies the SIM interface circuitry on the digital processor and SIM card (1.8V or 2.85V, 20mA)
  - VRRTC : supplies the Real-Time Clock module (1.8 V, 20 A)
  - VABB : supplies the analog portions of the AD6537B
  - VMIC : supplies the microphone interface circuitry (2.5 V, 1 mA)
  - VVCXO : supplies the voltage controlled crystal oscillator ( 2.75 V, 10 mA)

#### 3. Battery Charging Block

1. It can be used to charge Lithium Ion and/or Nickel Metal Hydride batteries.

Charger initialization, trickle charging, and Li-Ion charging control are implemented in hardware.

2. Charging Process

- Check charger is inserted or not
- If AD6537B detects that Charger is inserted, the CC-CV charging starts.
- Exception : When battery voltage is lower than 3.2V, the precharge(low current charge mode) starts firstly.
- And the battery voltage reach to 3.2V the CC-CV charging starts.

3. Pins used for charging

- VCHG : charger supply.
- GATEDRIVE : charge DAC output
- ISENSE : charge current sense input
- VBATSENSE : battery voltage sense input.
- BATTYP : battery type identification input
- REFCHG : voltage reference output

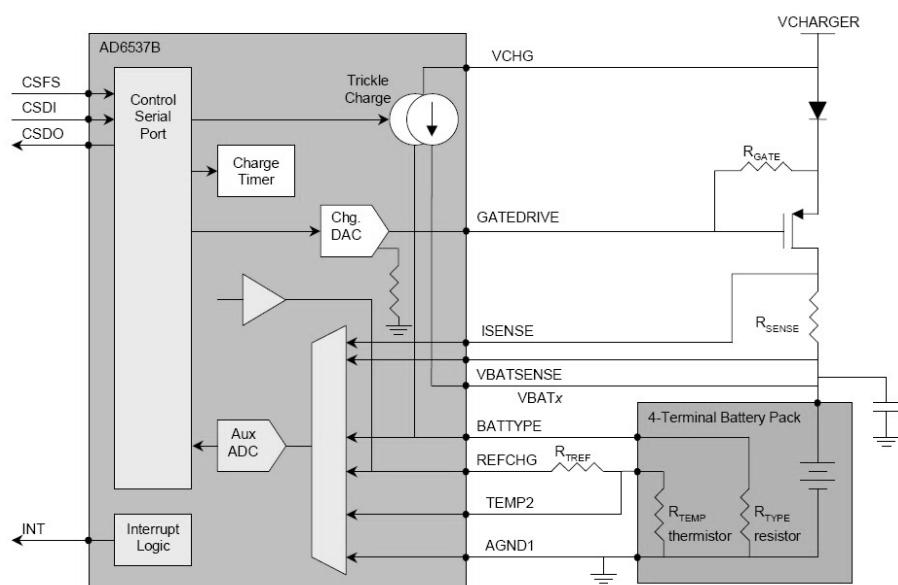
4. TA (Travel Adaptor)

- Input voltage: AC 85V ~ 260V, 50~60Hz
- Output voltage: DC 5.2V ( 0.2 V )
- Output current: Max 800mA ( 50mA )

5. Battery

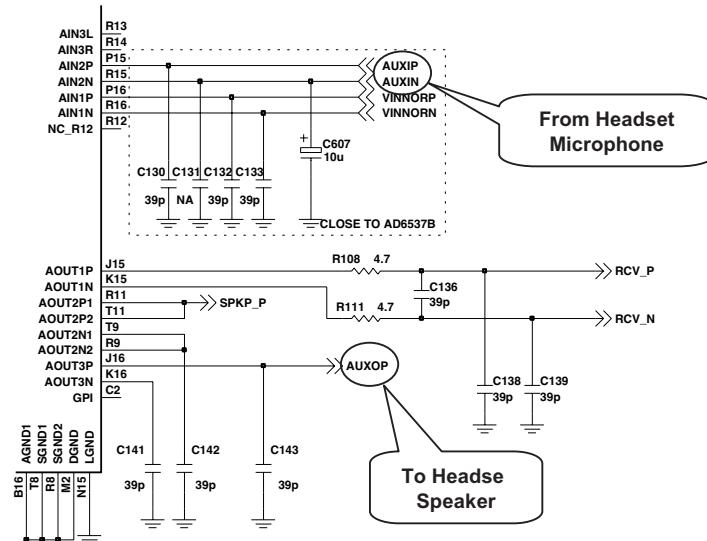
- Li-ion battery (Max 4.2V, Nom 3.7V)
- Standard battery: Capacity 1000mAh

**Figure 3-18. AD6537B BATTERY CHARGING BLOCK**

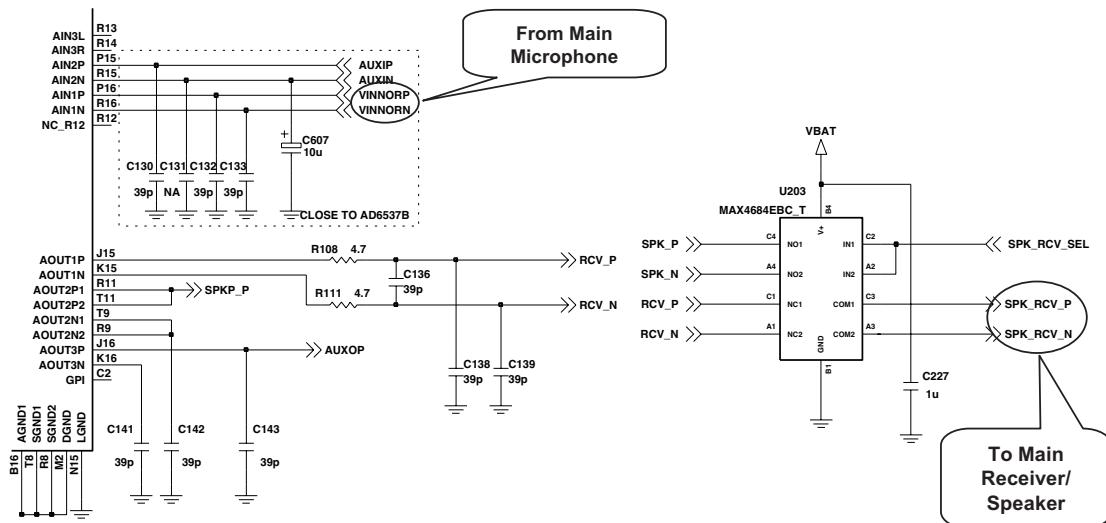


### 3. TECHNICAL BRIEF

**Figure 3-19. C3380 HEADSET SPEAKER CIRCUIT (AD6537B)**

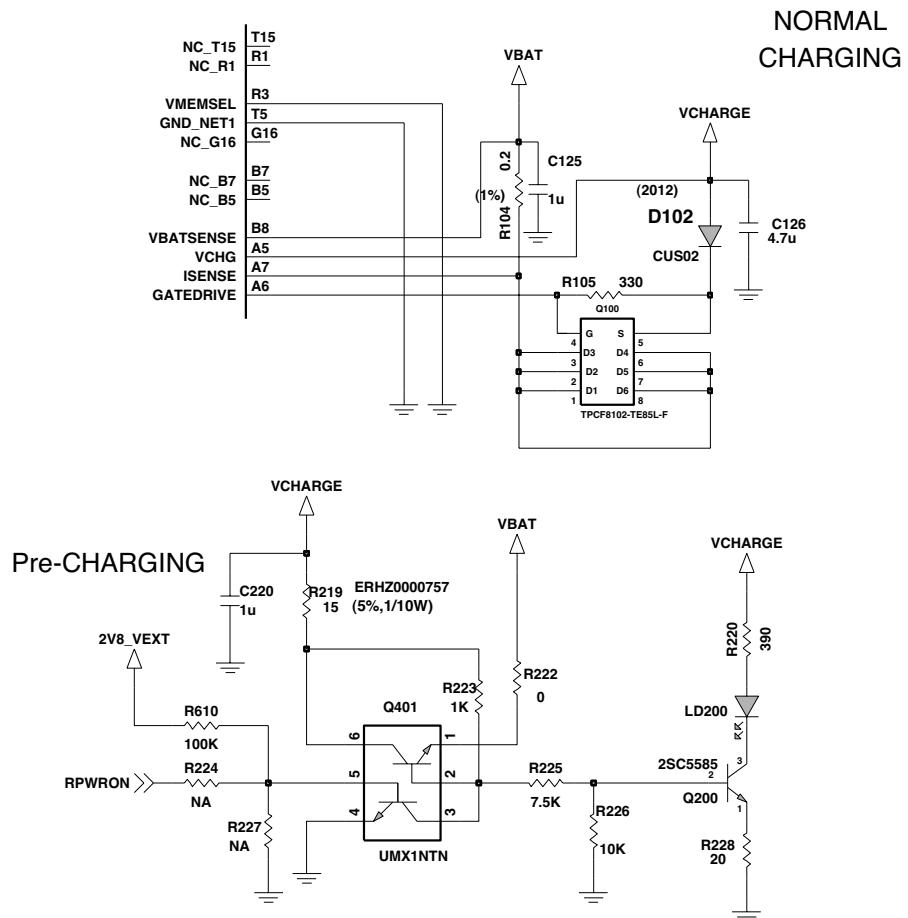


**Figure 3-20. C3380 HEADSET SPEAKER CIRCUIT (AD6537B)**



### 3. TECHNICAL BRIEF

**Figure 3-21. CIRCUIT FOR BATTERY CHARGING AT AD6537B**



In order to reduce time for trickle charging, additional circuit(Pre-charge circuit) was included. This circuit has supplied Max 160mA current into the battery additionally. So call it, it reduce trickle charging time

### 3. TECHNICAL BRIEF

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#### 3.7 Display and Interface

- Main LCD

Properties	Spec.	Unit
Active Screen Size	28.022(H) X 35.03(V)	mm
Color Depth	65,536	colors
Resolution	128 X RGB X 160	dots
Pixel Size	0.063(H) X 0.209(V)	mm

- Sub LCD

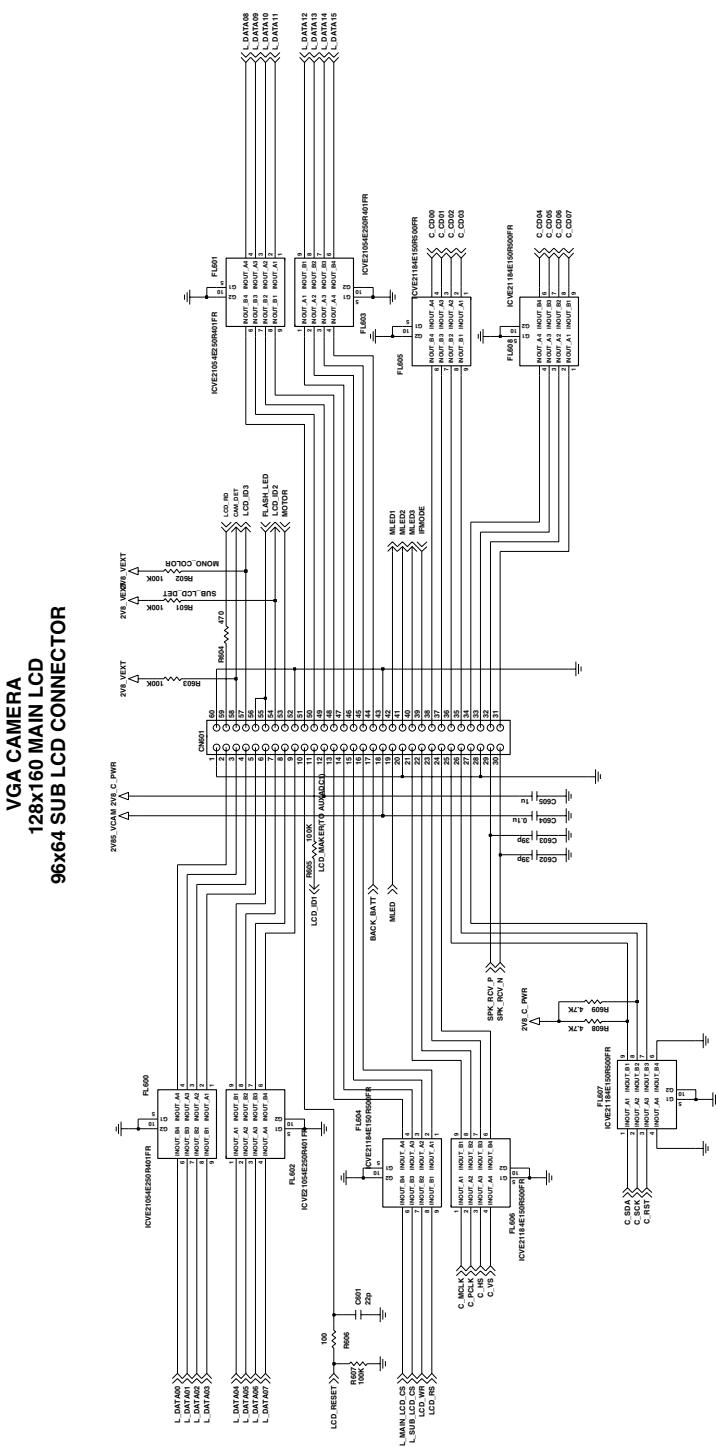
Properties	Spec.	Unit
Active Screen Size	18.902(H) X 13.43(V)	mm
Color Depth	Mono	
Resolution	96 X 64	dots
Pixel Size	0.187(H) X 0.2(V)	mm

Controlled by L\_MAIN\_LCD\_CS, LCD\_RESET, LCD\_RS, LCD\_WR, LCD\_RD, IFMODE, L\_DATA[00:15] ports

- L\_MAIN\_LCD\_CS : MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
- LCD\_RST : This pin resets LCD module. This signal comes from DBB directly.
- LCD\_RS: This pin determines whether the data to LCD module are display data or control data.
- IFMODE : This can select 16bits or 8bits parallel bus. But for the future.  
Default is low (low is 16bits interface)
- L\_WR : Write control Signal
- L\_RD : Read control Signal. But this pin used only for debugging.
- L\_DATA[00:15] : Parallel data lines.
- LCD\_ID[1:2] : LCD type selection signals
  - LCD\_ID1 : LCD maker(2.4V is SII, 0V is HyeLCD)
  - LCD\_ID[2:3] : for the future using
- For using 65K color, data buses should be 16 bits.

### **3. TECHNICAL BRIEF**

**Figure 3-23. LCD INTERFACE CIRCUIT**



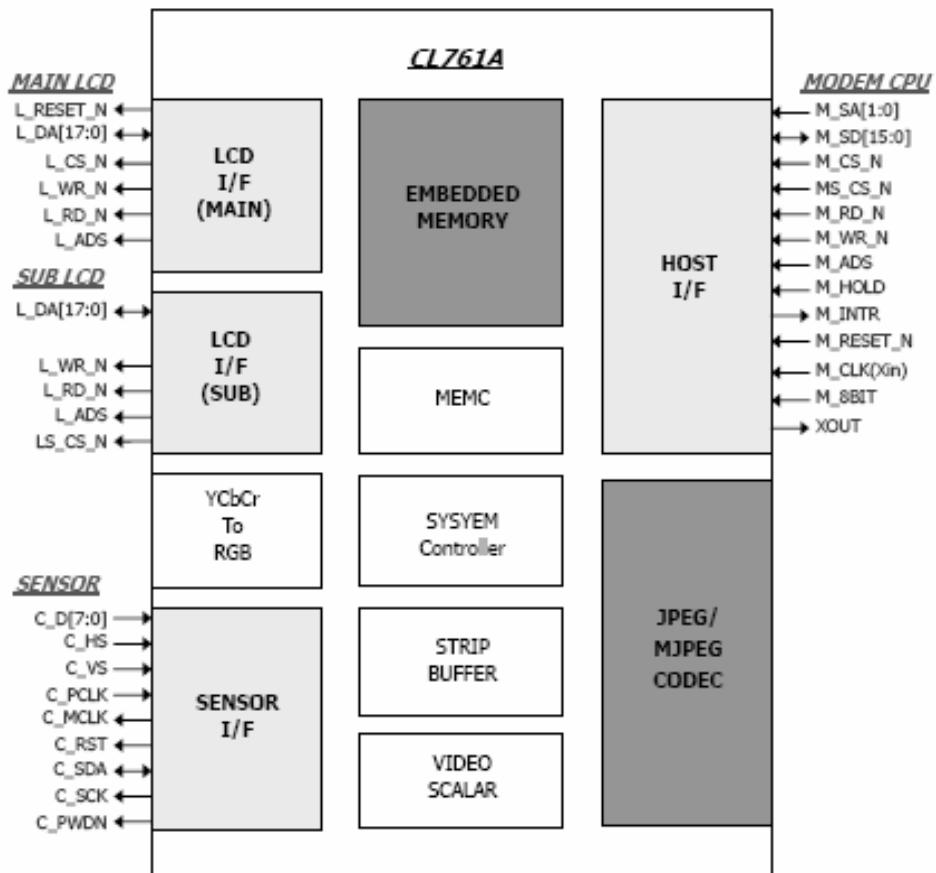
### 3. TECHNICAL BRIEF

#### 3.8 Camera Interface

The CL761A, a camera application processor optimized for the mobile operation, provides various highly-advanced functions, such as Sensor Interface, Fully-hardwired JPEG Codec, a scalar for Digital Zoom Function, various LCD Interfaces, Motion JPEG Codec, high-speed Image data processing and so on.

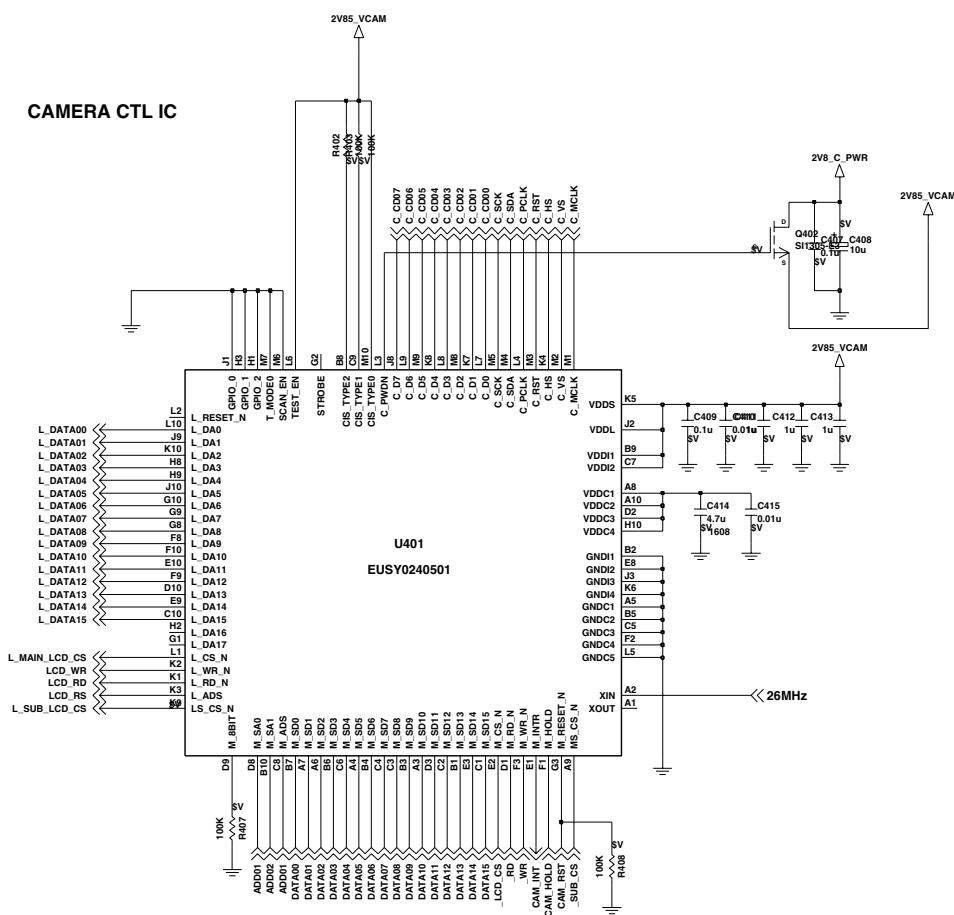
Also, the CL761A supports 80-Type Indirect Parallel Interface, so developers can easily distinguish Bypass Mode from Camera Mode by adding CORE LOGIC's CL761A chip at the head of the LCD Interface. In addition, the CL761A supports various types of STN/TFT/OLED LCD Driver Controllers of 8-bpp, 12-bpp, 16-bpp, and 18-bpp color depths. With the built-in CMOS-/CCD-based Image Sensor Controller which supports CCIR601 and CCIR656 formats.

CL761A System Architecture Diagram



### **3. TECHNICAL BRIEF**

**Figure 3-26. CL761S BLOCK DIAGRAM**



### 3. TECHNICAL BRIEF

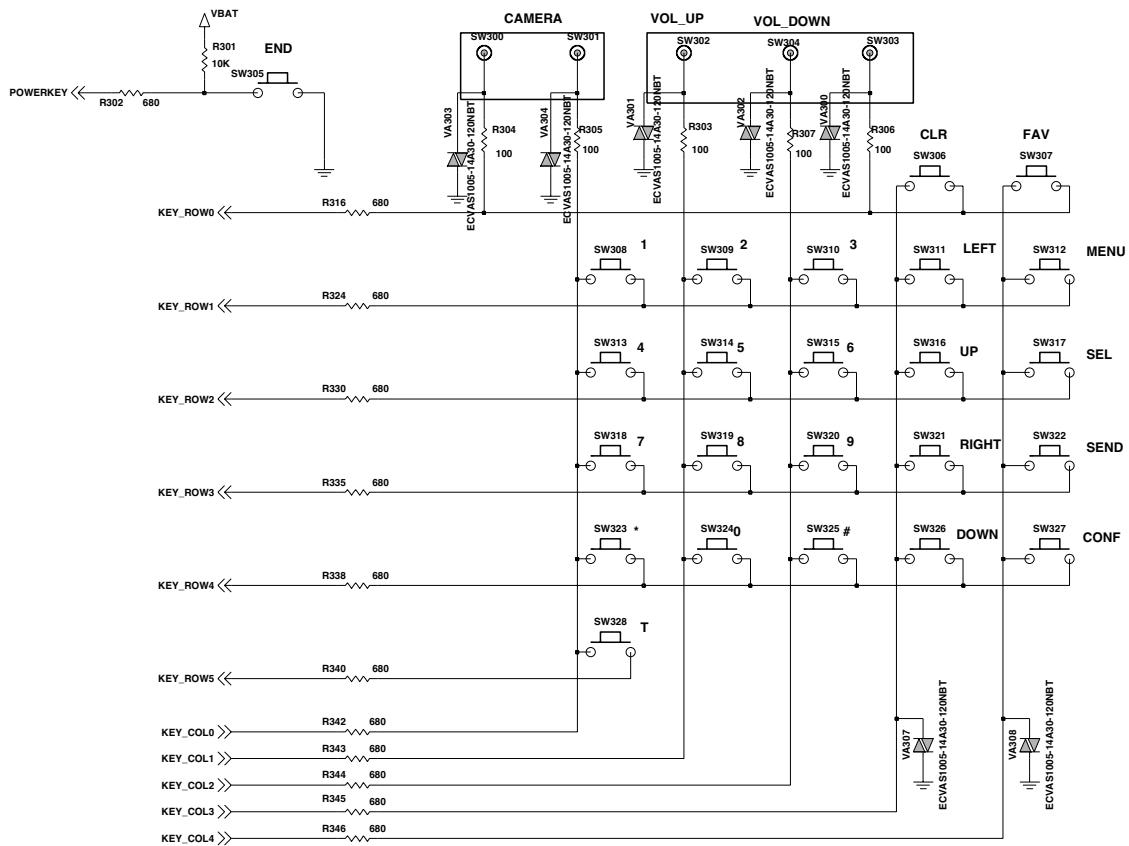
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#### 3.9 Keypad Switches and Scanning

The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 27 switches (Normal Key 24EA, Camera side key, Volume up down side key), connected in a matrix of 5 rows by 5 columns and additional GPIO 35 for KEY\_ROW5, as shown in Figure 3-24, except for the power switch (KB1), which is connected independently. Functions, the row and column lines of the keypad are connected to ports of AD6527. The columns are outputs, while the rows are inputs and have pull-up resistors built in.

When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6527 to identify the pressed key.

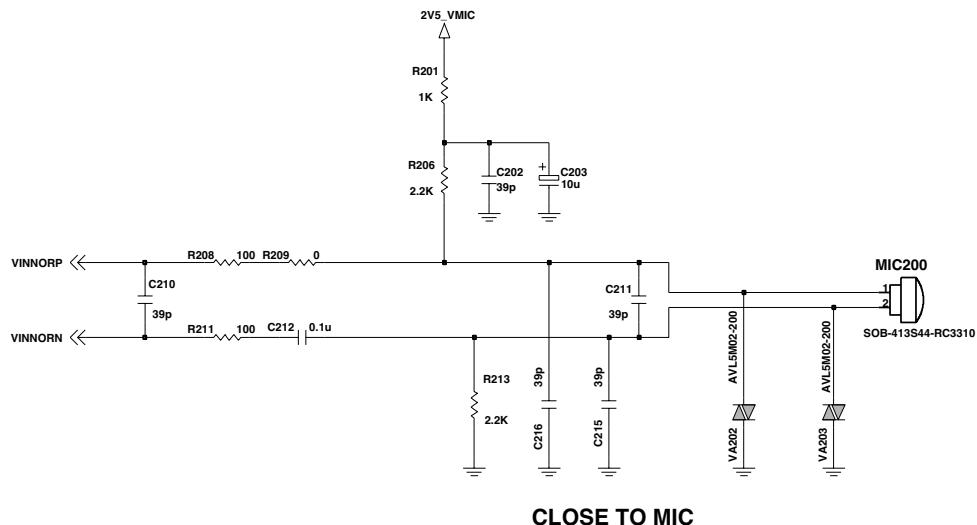
Figure 3-27. Keypad Switches and Scanning



## 3.10 Microphone

The microphone is placed to the front cover and soldered to main PCB. The audio signal is passed to AIN1P and AIN1N pins of AD6537B. The voltage supply VMIC is output from AD6537B, and is a biased voltage for the AIN1P. The AIN1P and AIN1N signals are then A/D converted by the voice-band ADC part of AD6537B. The digitized speech (PCM 8KHz ,16KHz) is then passed to the DSP section of AD6527 for processing (coding, interleaving etc).

**Figure 3-28. Connection between Microphone and AD6537B**



## 3.11 Main Speaker

In the case of C3380 , there are 3 different speakers. One is main speaker for the received voice, the other is loud speaker for playback of ring tone , key tone and other MIDI sounds and another is headset speaker.

The main speaker is driven directly by AD6537B AOUT1P and AOUT1N pins and the gain is controlled by the PGA in an AD6537B. The receiver is placed in the folder cover and connected to AOUT1x terminal via FPCB.

### 3. TECHNICAL BRIEF

#### 3.12 Headset Interface

This phone chooses a 5 pin type headset which has 6 electrodes such as GND, AUXIP, AUXIN (this pin is floating), AUXOP, JACK\_DETECT, HOOK\_DETECT. This type supports mono sound

##### Switching from Receiver to Headset Jack

If jack is inserted, JACK\_DETECT goes from low to high.

Audio path is switched from receiver to earphone by JACK\_DETECT interrupt.

##### Switching from Headset Jack to Receiver

If jack is removed, JACK\_DETECT goes from high to low.

Audio path is switched from earphone to receiver by JACK\_DETECT interrupt.

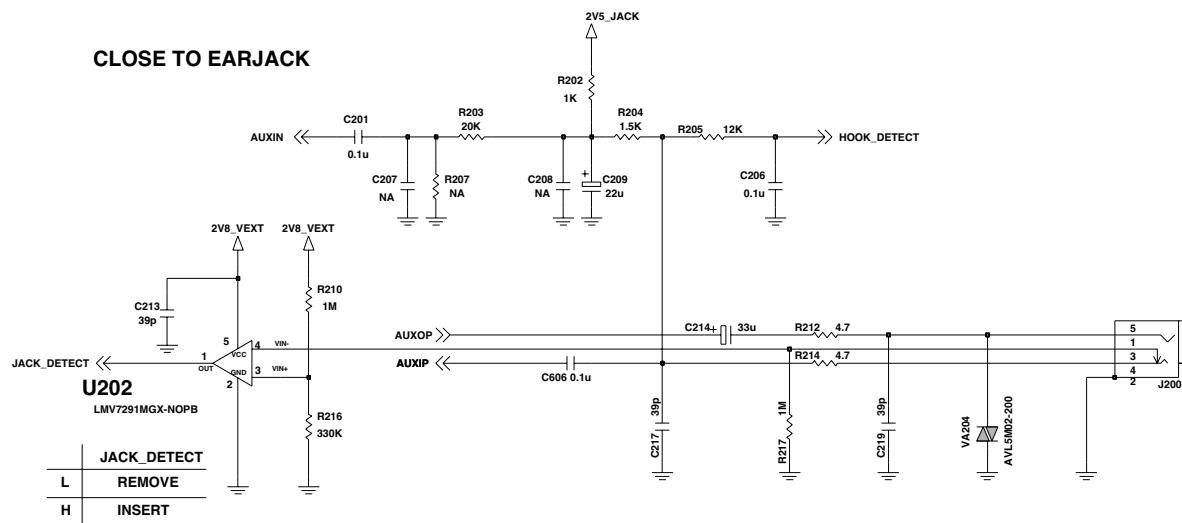
##### Hook detection

If hook-button is pressed, HOOK\_DETECT is changed from high to low.

This is detected by AUXADC2.

And then hook is detected.

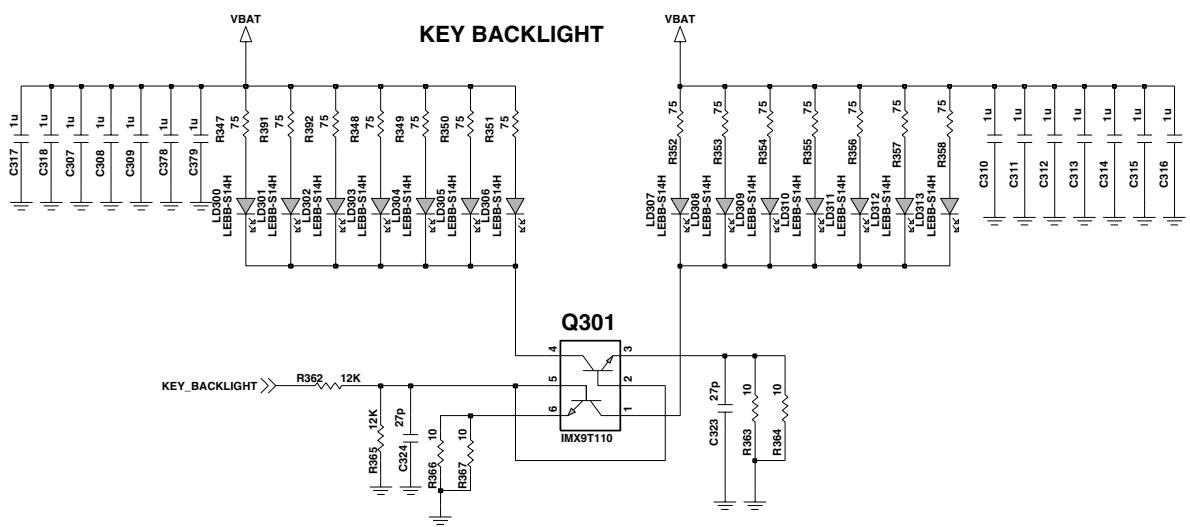
**Figure 3-29. HEADSET JACK INTERFACE**



#### 3.13 Key Back-light Illumination

In key back-light illumination, there are 12 Blue LEDs in Main Board, which are driven by KEY\_BACKLIGHT signal from AD6527.

**Figure 3-30. KEY BACK-LIGHT ILLUMINTION**



### 3. TECHNICAL BRIEF

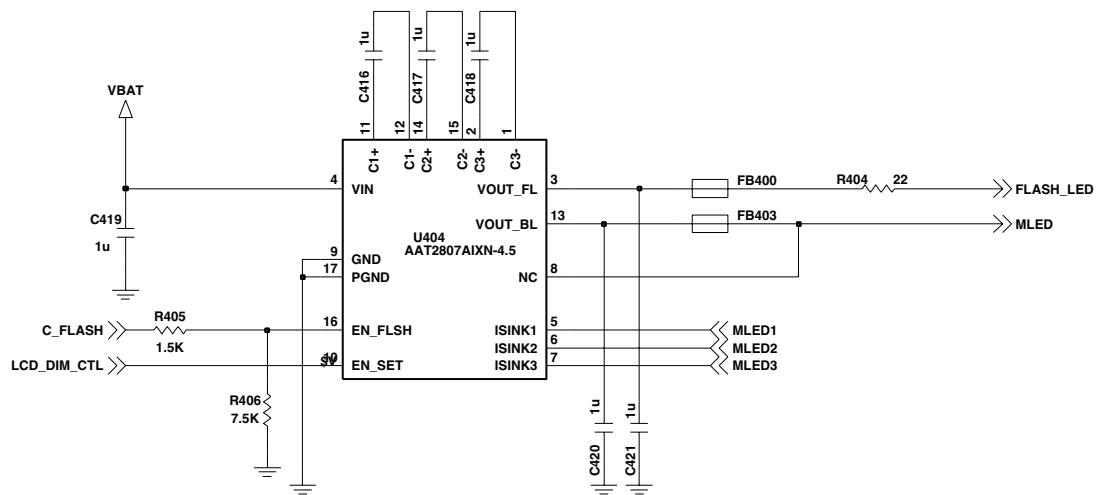
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#### 3.14 LCD Back-light Illumination

LCD backlight LEDs are controlled by DBB via AAT2807, U402.

**Figure 3-31. MAIN LCD BACKLIGHT ILLUMINATION**

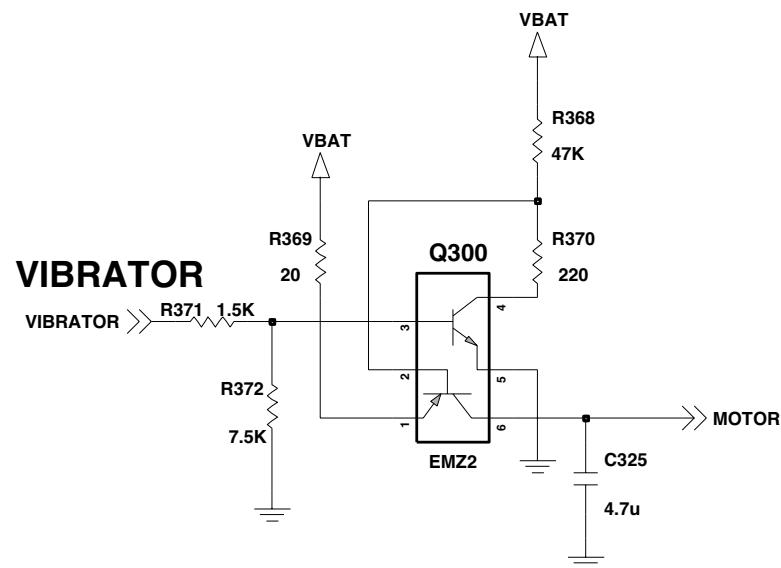
##### WHITE/FLASH LED LDO



#### 3.15 VIBRATOR

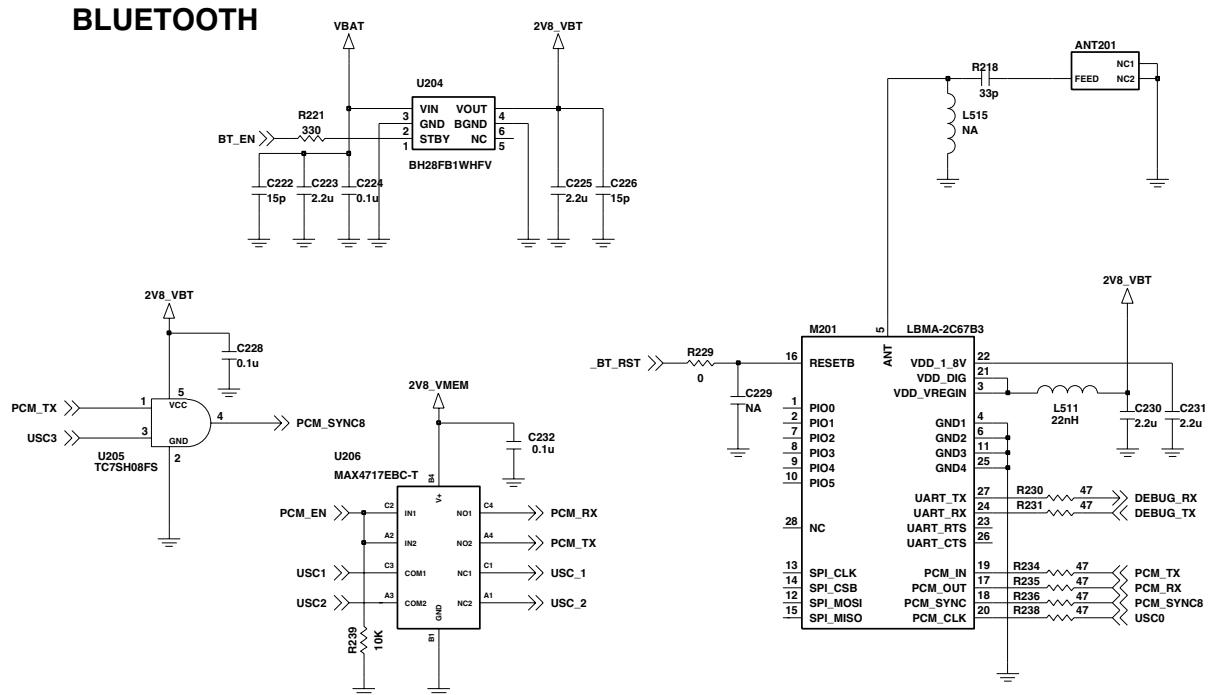
The vibrator is placed in the folder cover and contacted to LCD MODULE. The vibrator is driven from VIBRATOR (GPIO\_3) of AD6527.

Figure 3-32. MOTOR



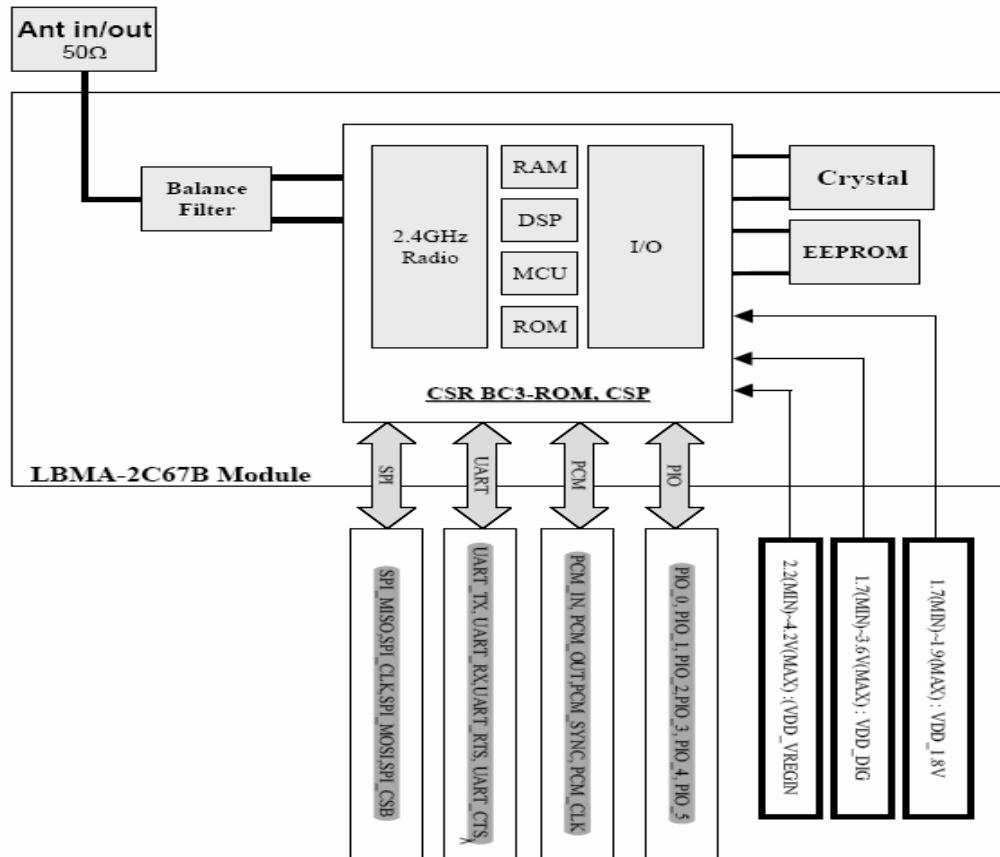
### 3. TECHNICAL BRIEF

#### 3.16 BLUETOOTH



- 1) U204(BH28FB1WHFV) : Provide power for bluetooth block
- 2) U205(TC7SH08FS) : PCM Sync Clock rate converter for bluetooth clock(8kHz)
- 3) U206(MAX4717EBC\_T) : Analog switch for bluetooth block
- 4) M201(LBMA-2C67B2) : Bluetooth module

### 3. TECHNICAL BRIEF



#### Bluetooth Module Features

- Output power(Class2) : 1.0 dBm Typ.
- Receiver Sensitivity : -83 dBm Max.
- Dimensions : 6.9\*7.9\*1.5 (unit: mm)
- Wide operating temperature range(Target) : -40 to 85C (Storage: -40 to 100C)
- D.C Supply voltage range : 1.8V or 3.0V(Nominal)
- Interfaces : UART and SPI for data and PCM for voice
- Stack layer : HCI or RFCOMM
- Compatibility with Bluetooth Specification 1.2

## 4. TROUBLE SHOOTING

---

## 4. TROUBLE SHOOTING

### 4.1 RX Trouble

#### Test Points

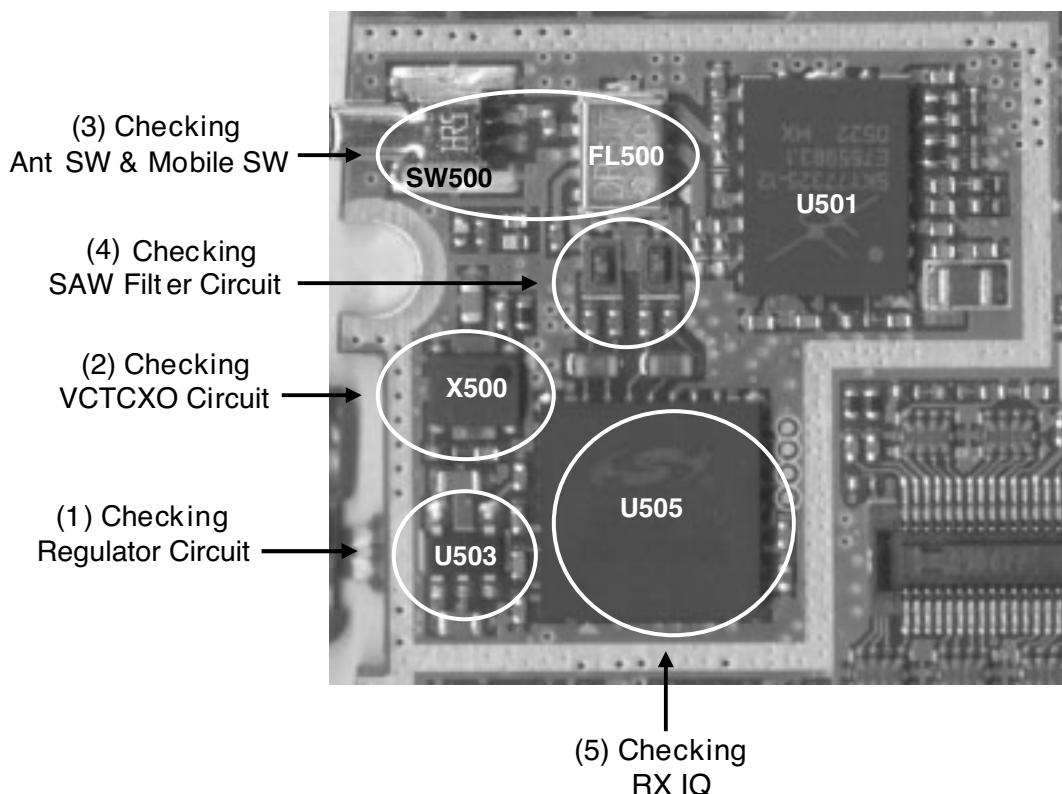
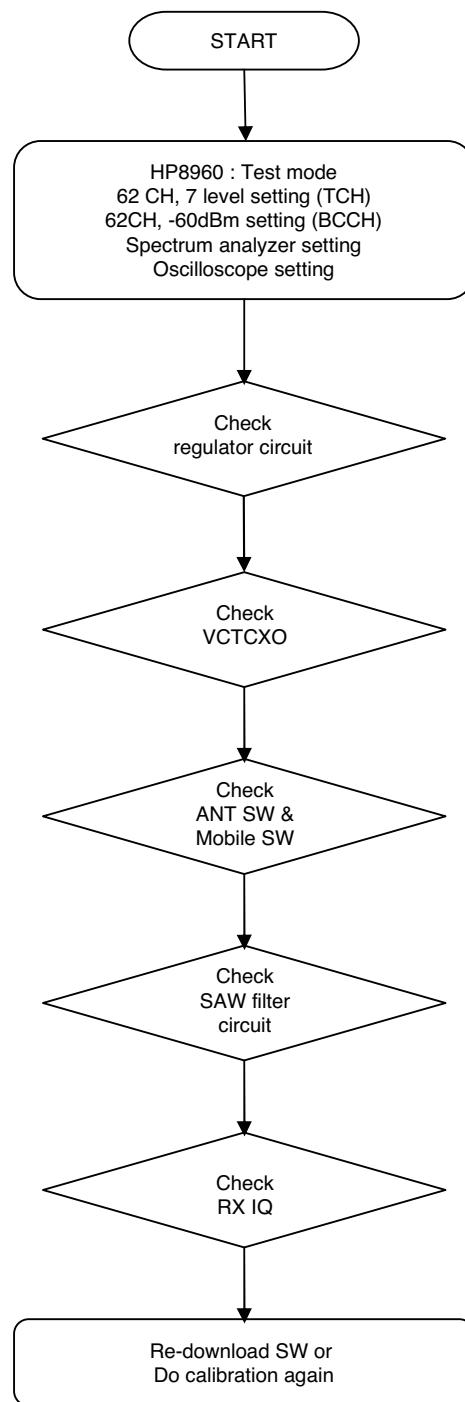


Figure 4-1(a)

### Checking Flow



## 4. TROUBLE SHOOTING

### (1) Checking Regulator Circuit

#### Test Points

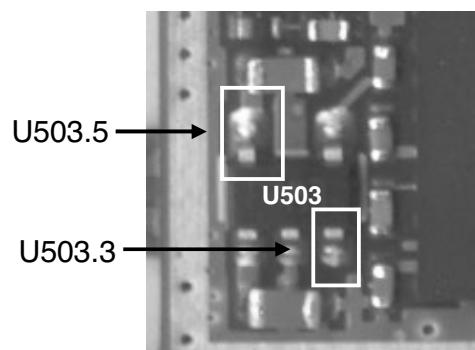
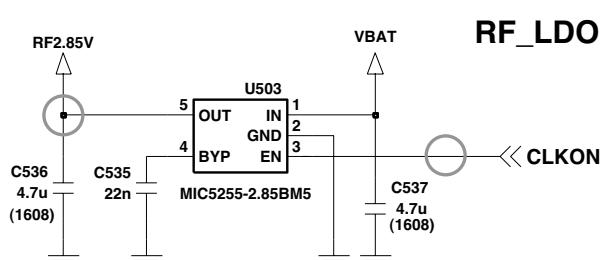
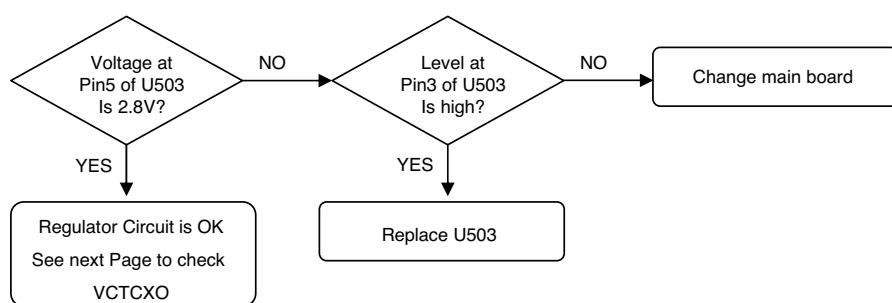


Figure 4-2

#### Circuit Diagram



#### Checking Flow



## 4. TROUBLE SHOOTING

### (2) Checking VCTCXO Circuit

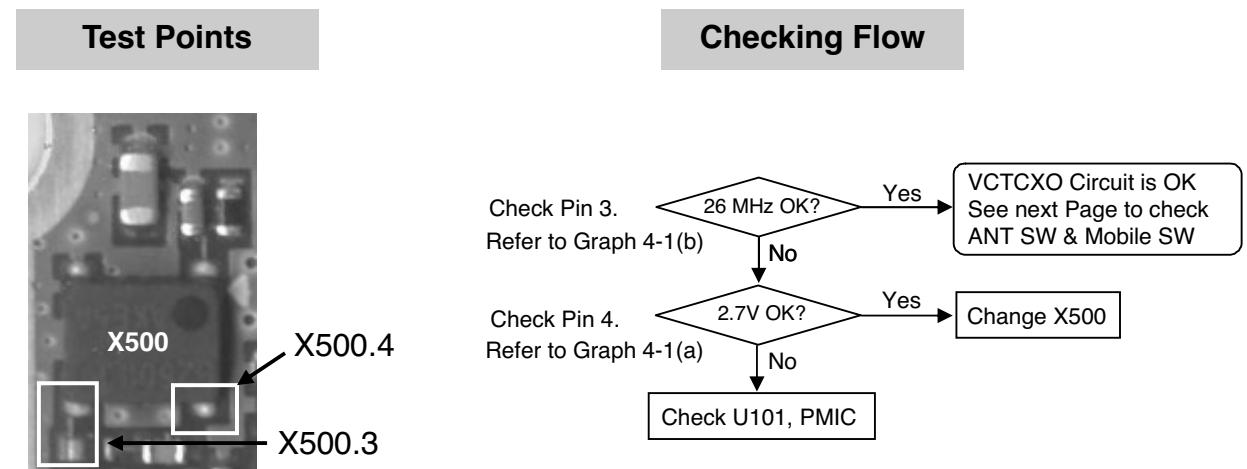
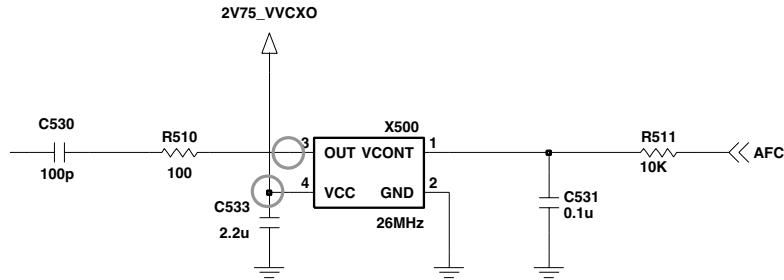
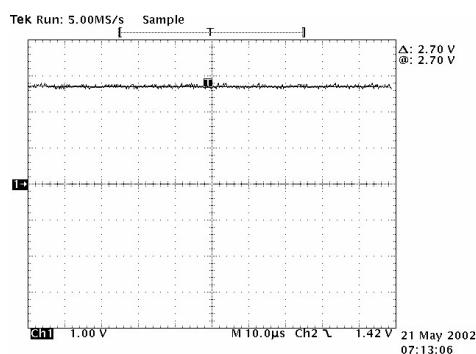


Figure 4-3

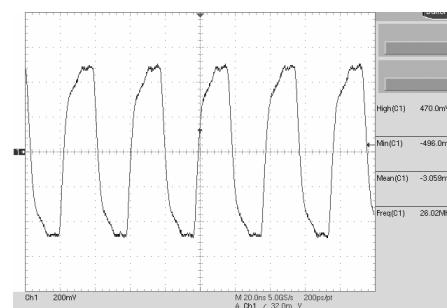
### Circuit Diagram



### Waveform



Graph 4-1(a)

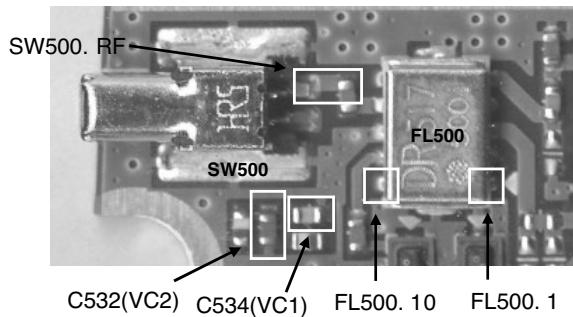


Graph 4-1(b)

## 4. TROUBLE SHOOTING

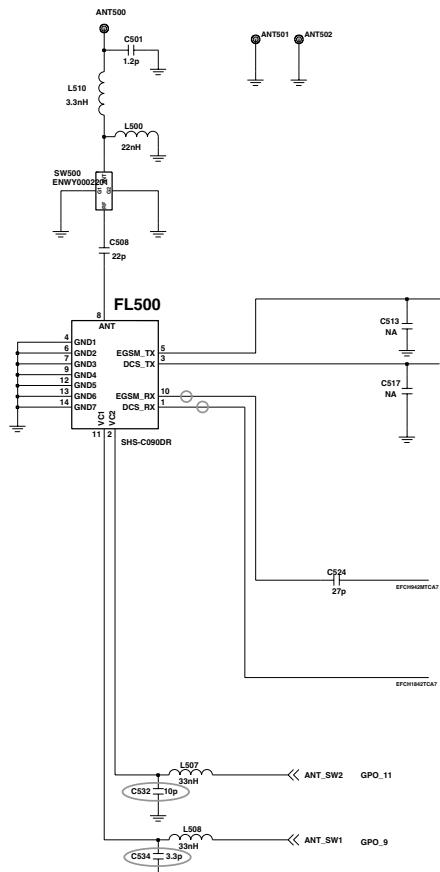
### (3) Checking Ant SW & Mobile SW

#### Test Points

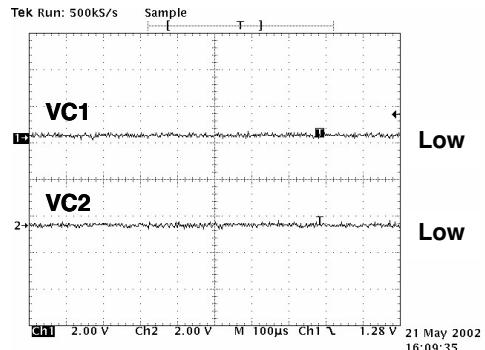


**Figure 4-5**

#### Circuit Diagram



#### Waveform



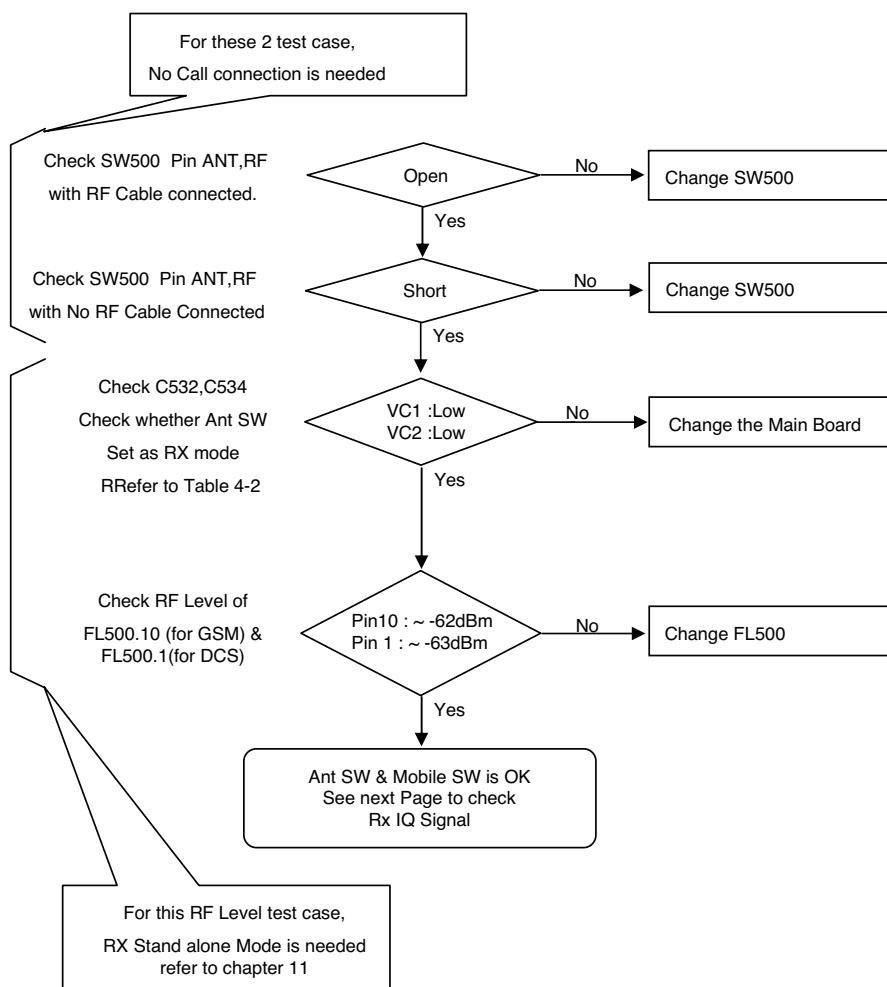
**ANT SW Control GSM& DCS RX Mode**  
**Graph 4-3**

	ANT_SW1	ANT_SW2
GSM_TX	H	L
DCS_TX	L	H
RX	L	L

**Table 4-2**

## 4. TROUBLE SHOOTING

### Checking Flow

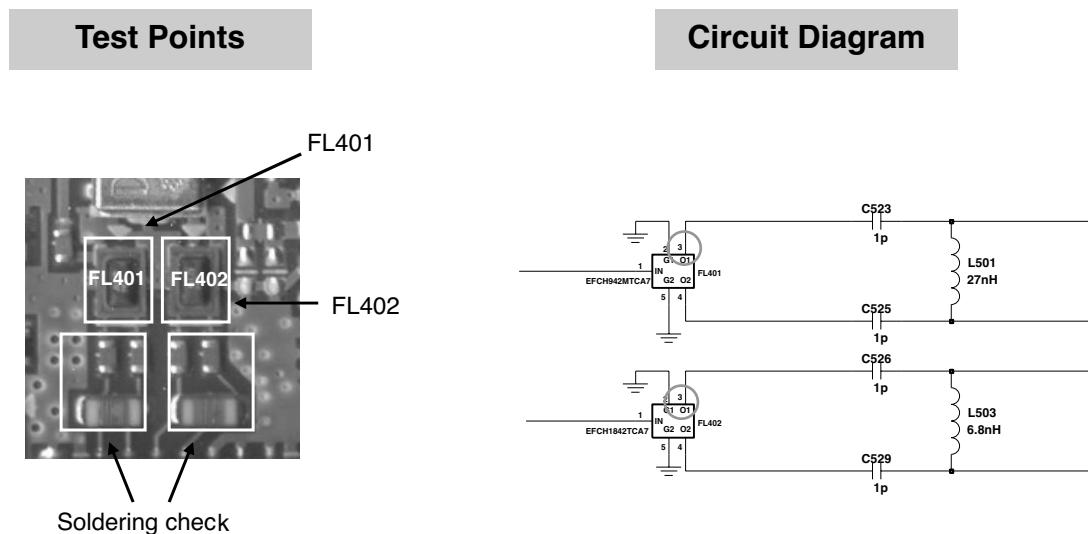


	ANT_SW1	ANT_SW2
GSM_TX	H	L
DCS_TX	L	H
RX	L	L

**Table 4-2**

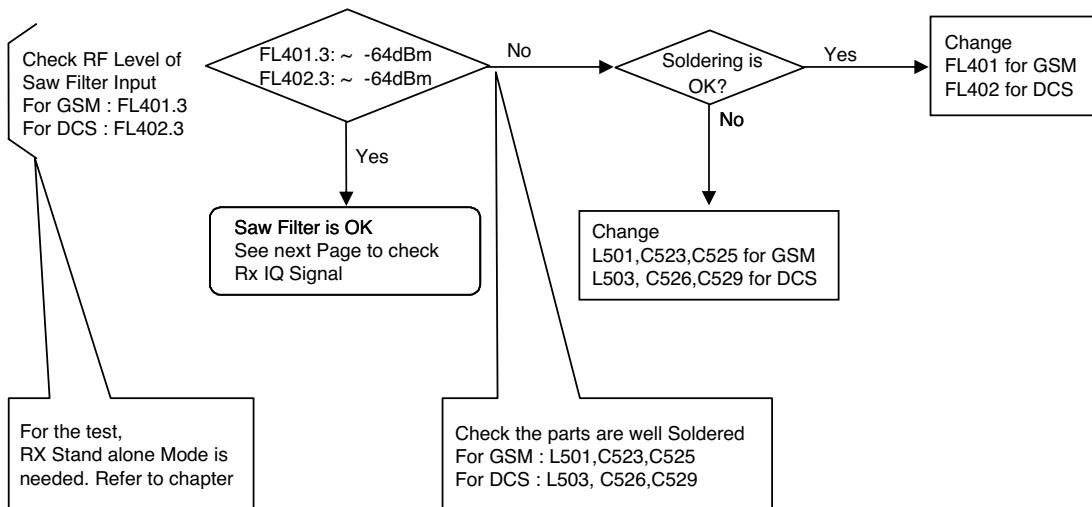
## 4. TROUBLE SHOOTING

### (4) Checking SAW Filter Circuit



**Figure 4-6**

### Checking Flow



## 4. TROUBLE SHOOTING

### (5) Checking RX IQ

#### Test Points      Circuit Diagram

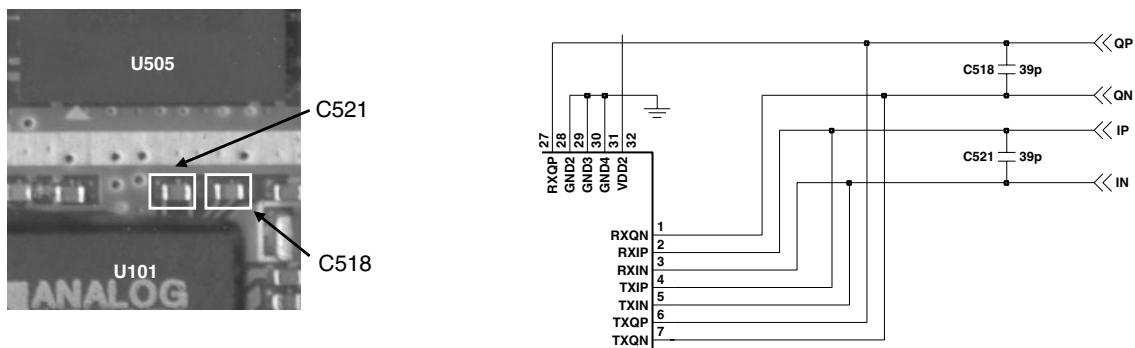
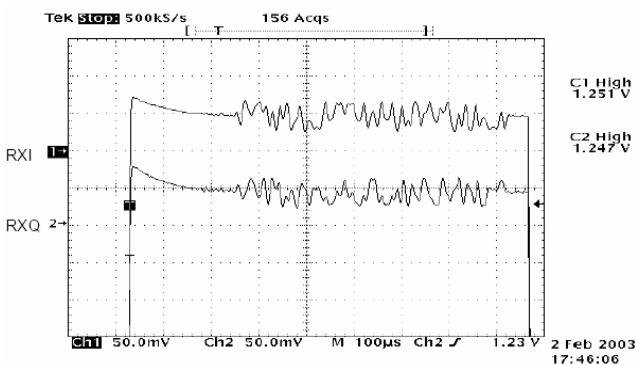


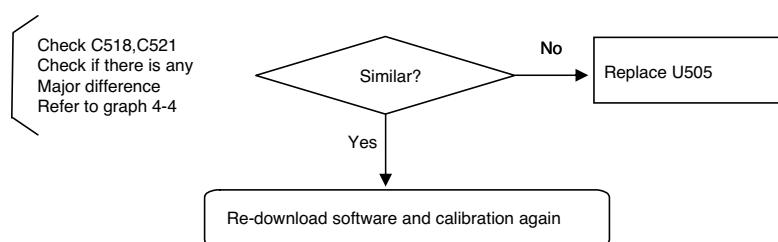
Figure 4-7

#### Waveform



Graph 4-4

#### Checking Flow



## 4. TROUBLE SHOOTING

---

### 4.2 TX Trouble

#### Test Points

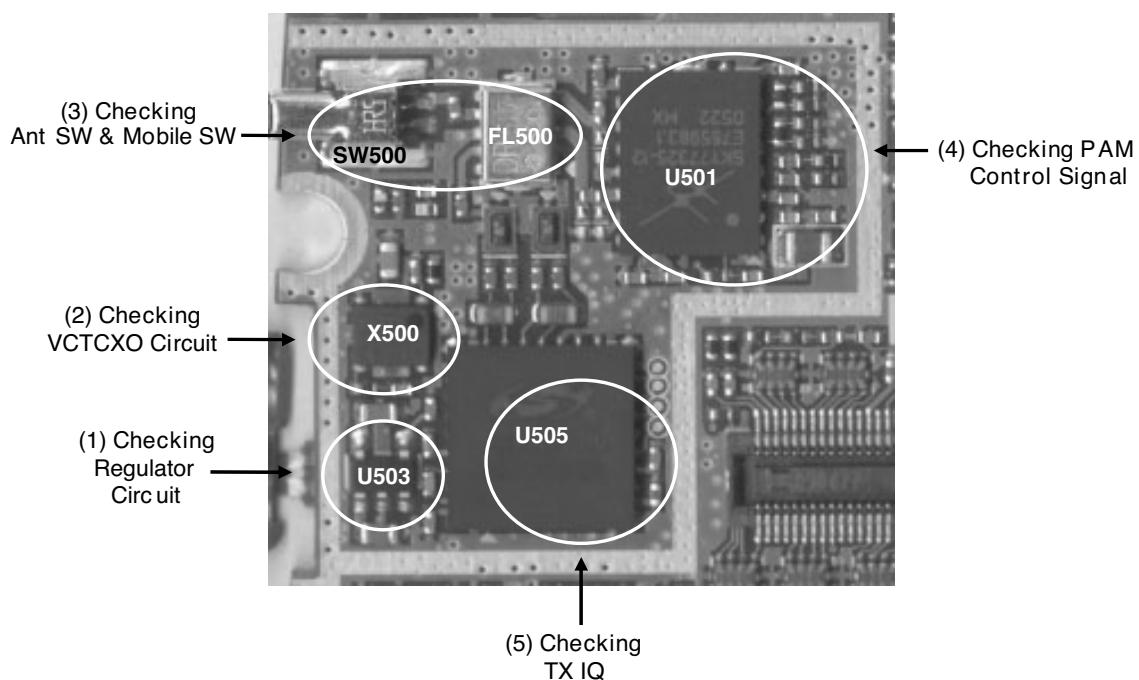
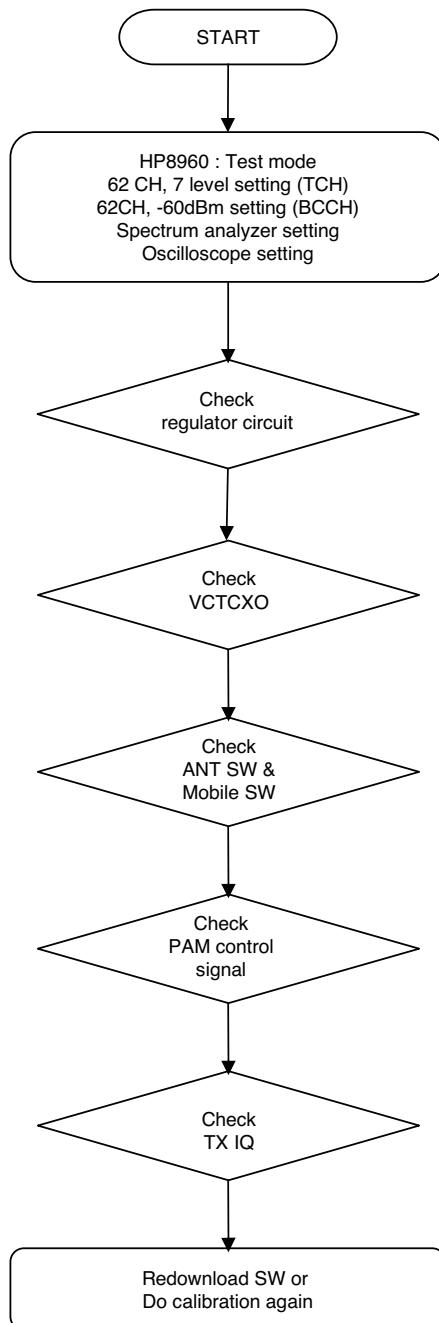


Figure 4-8

### Checking Flow



## 4. TROUBLE SHOOTING

### (1) Checking Regulator Circuit

#### Test Points

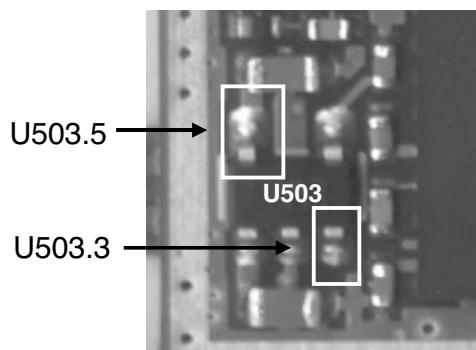
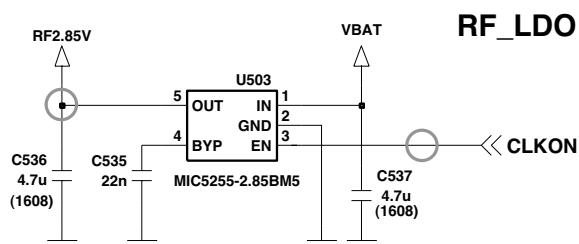
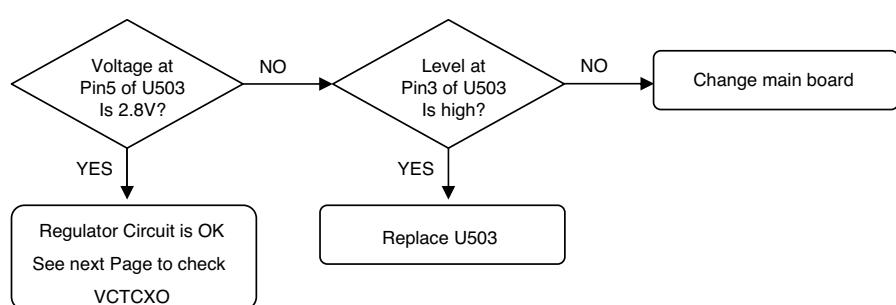


Figure 4-2

#### Circuit Diagram

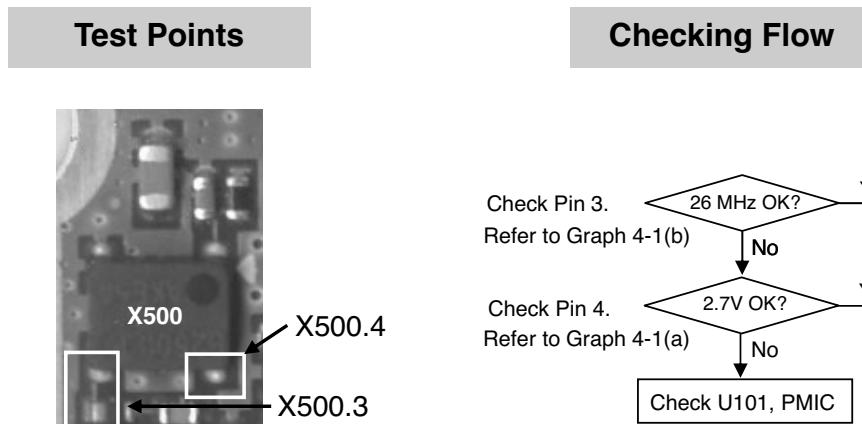


#### Checking Flow



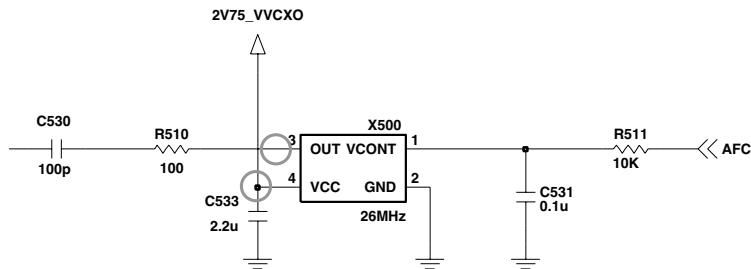
## 4. TROUBLE SHOOTING

### (2) Checking VCTCXO Circuit

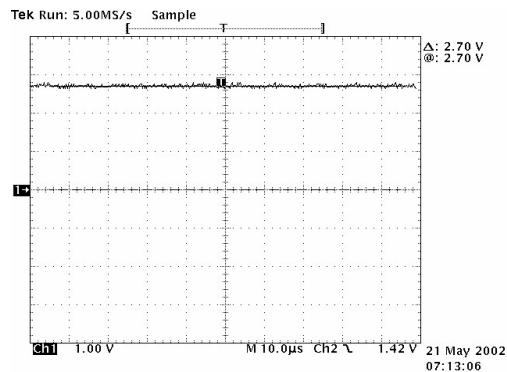


**Figure 4-3**

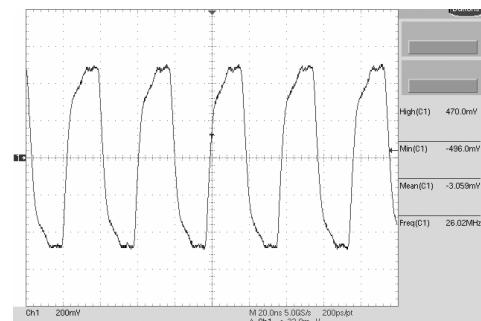
### Circuit Diagram



### Waveform



**Graph 4-1(a)**

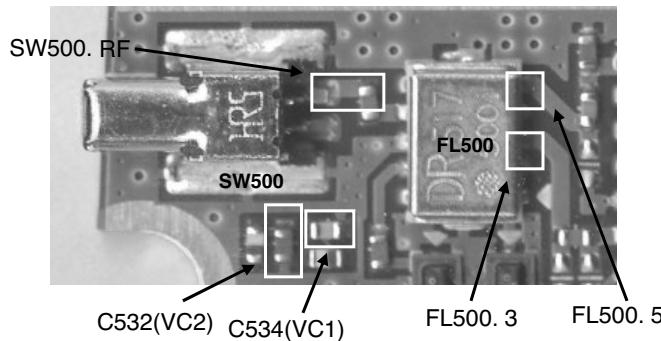


**Graph 4-1(b)**

## 4. TROUBLE SHOOTING

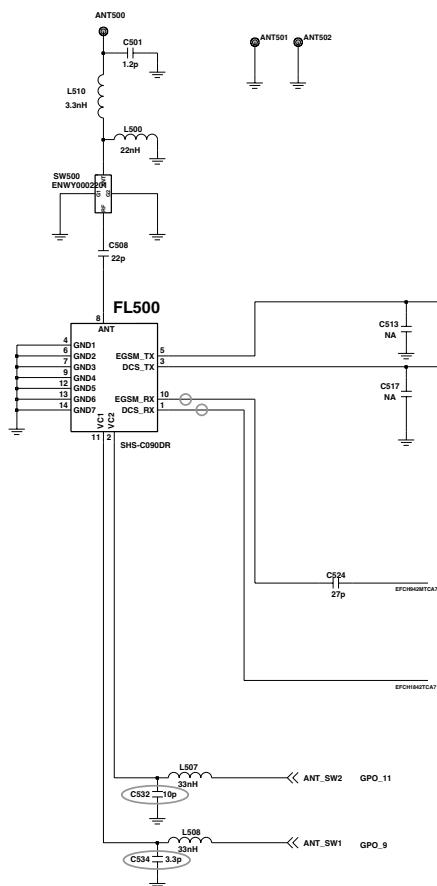
### (3) Checking Ant SW & Mobile SW

#### Test Points

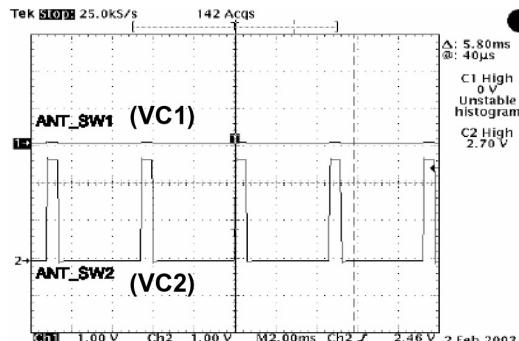


**Figure 4-5**

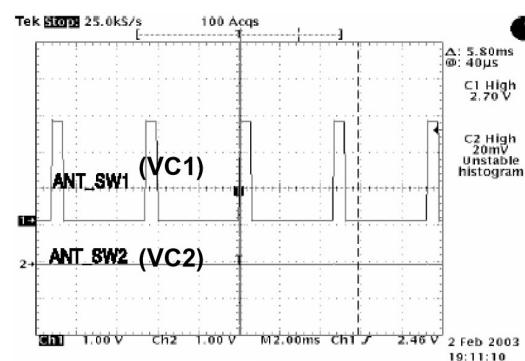
#### Circuit Diagram



#### Waveform



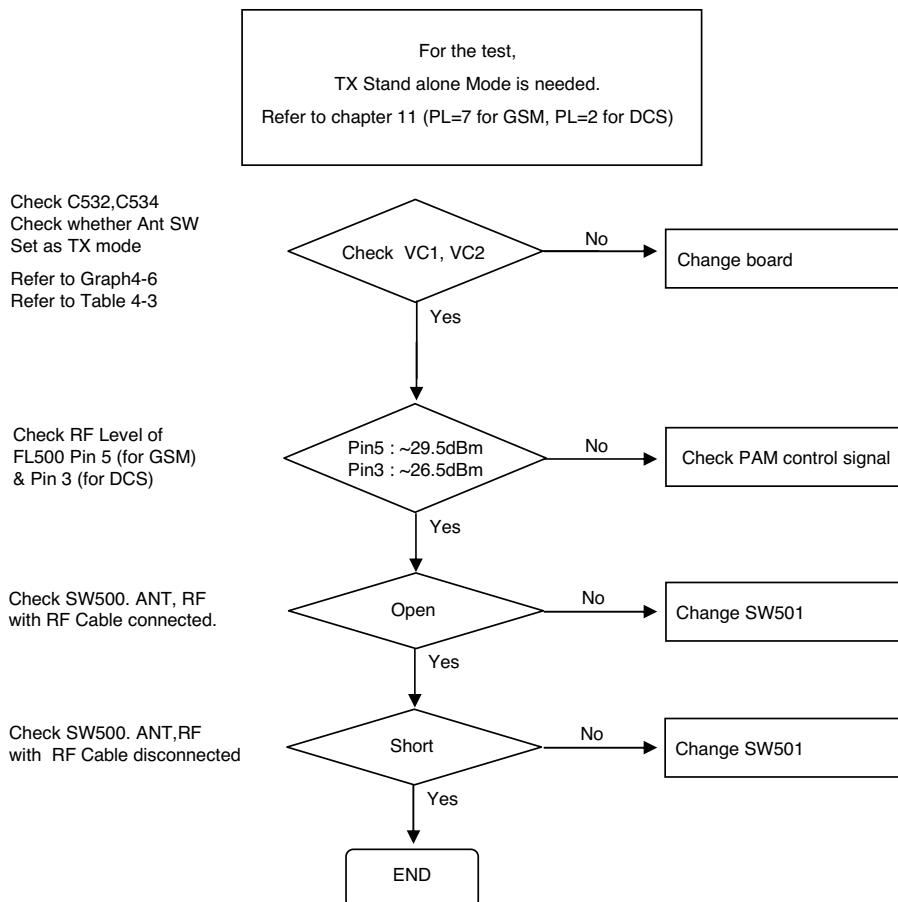
**Graph 4-6(a)**



**Graph 4-6(b)**

## 4. TROUBLE SHOOTING

### Checking Flow

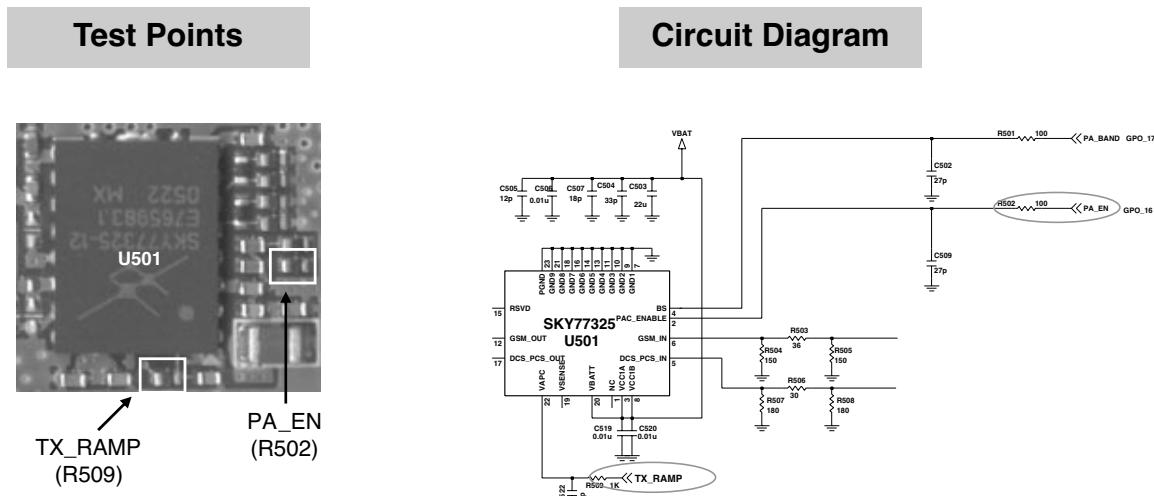


	ANT_SW1	ANT_SW2
GSM_TX	H	L
DCS_TX	L	H
RX	L	L

**Table 4-3**

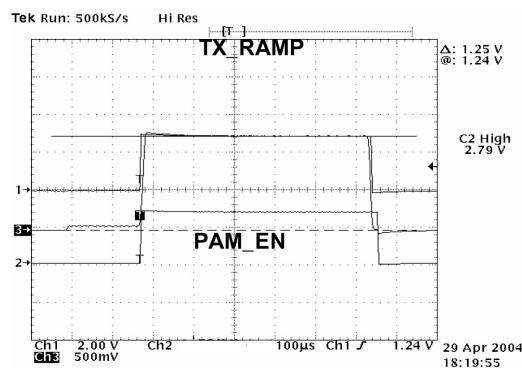
## 4. TROUBLE SHOOTING

### (4) Checking PAM Control Signal



**Figure 4-12**

### Waveform

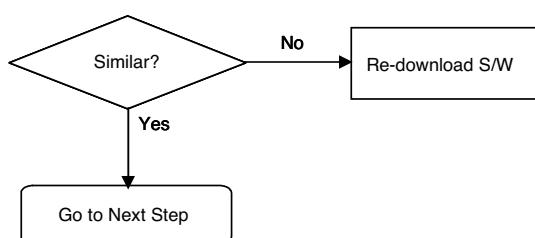


**Graph 4-7**

### Checking Flow

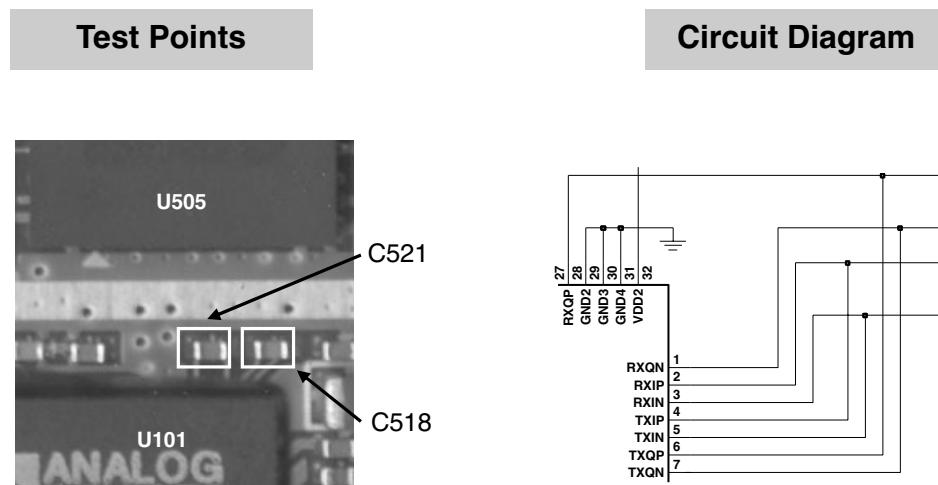
Check TX\_RAMP and PA\_EN  
Check if there is  
Any Major Difference or not

Refer to Graph 4-7



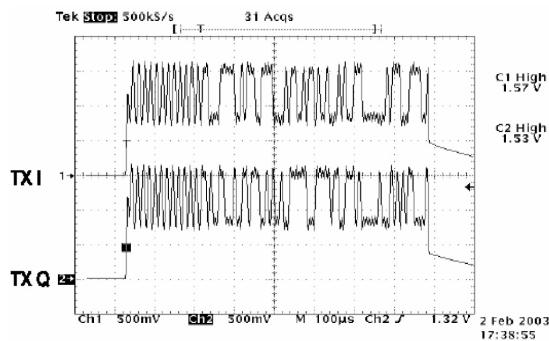
## 4. TROUBLE SHOOTING

### (5) Checking TX IQ



**Figure 4-13**

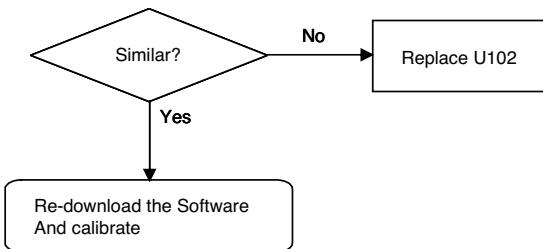
### Waveform



**Graph 4-8**

### Checking Flow

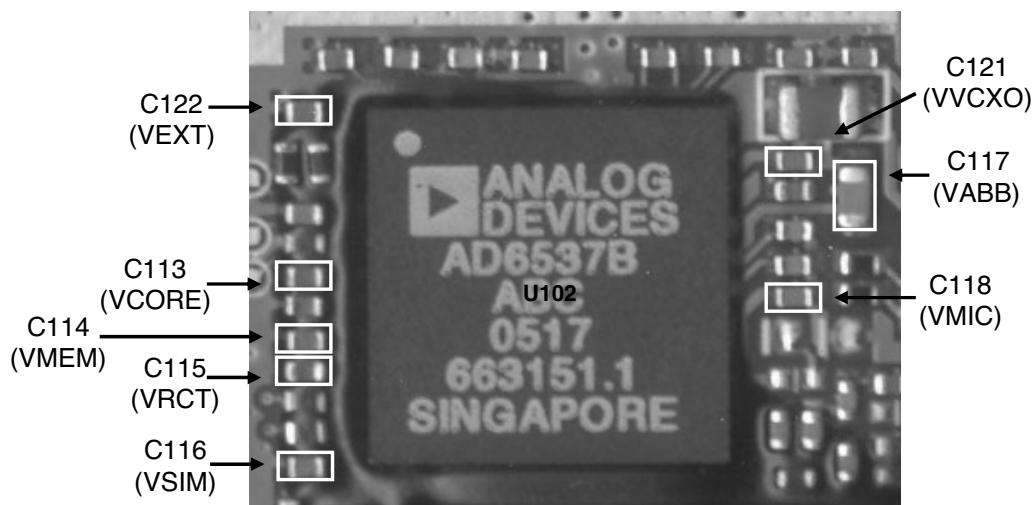
Check if there is  
Any Major Difference or not  
Refer to Graph 4-8



## 4. TROUBLE SHOOTING

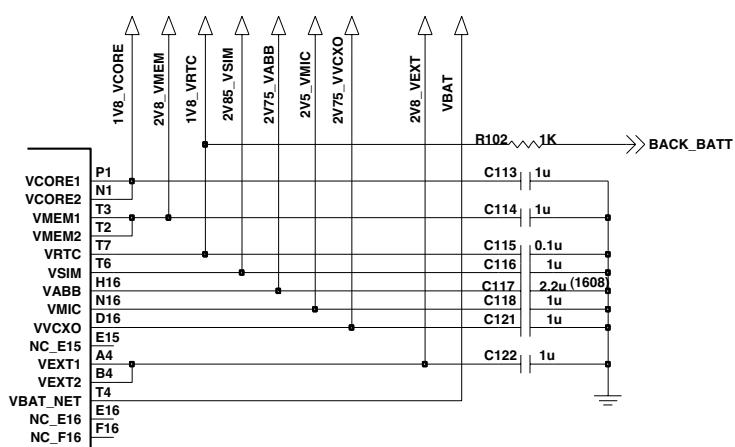
### 4.3 Power On Trouble

#### Test Points



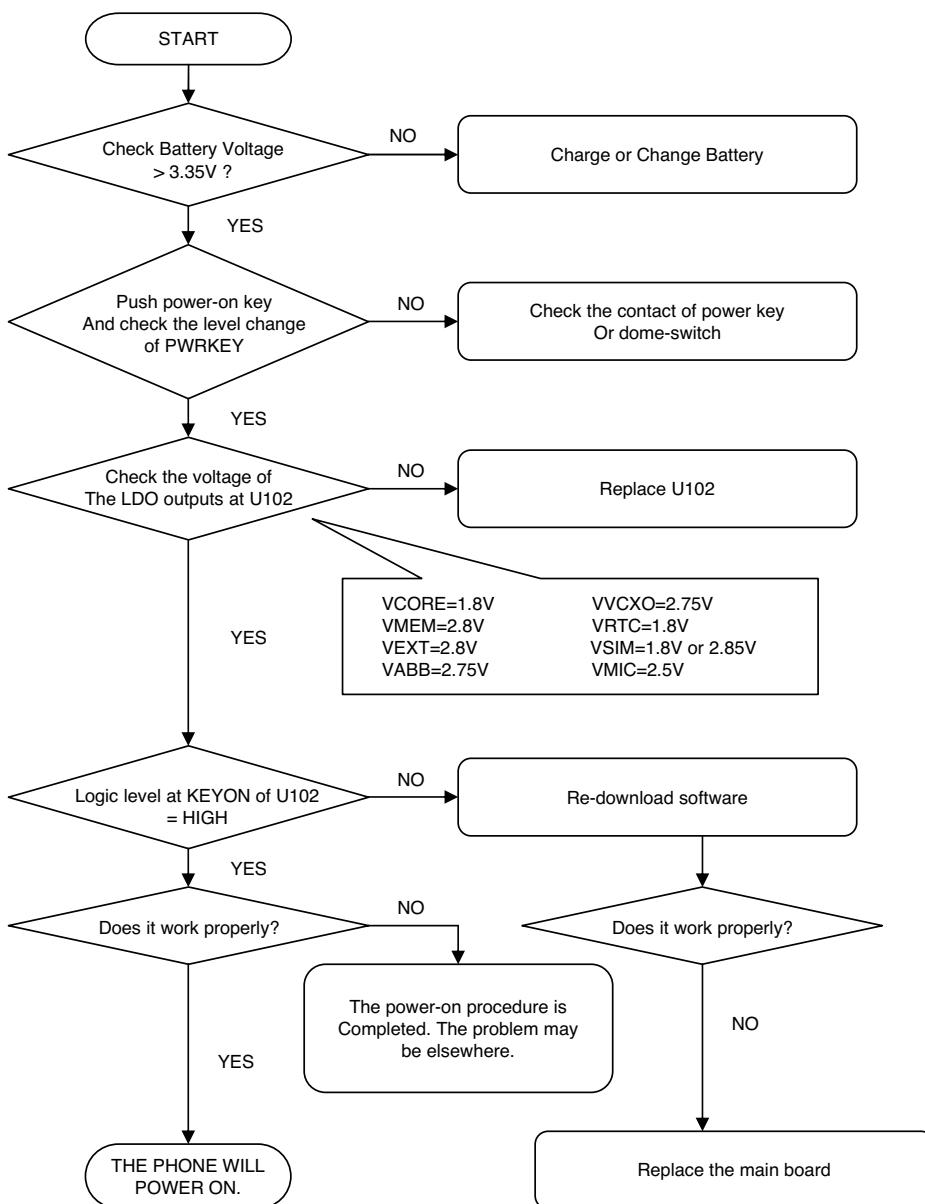
**Figure 4-14**

#### Circuit Diagram



## 4. TROUBLE SHOOTING

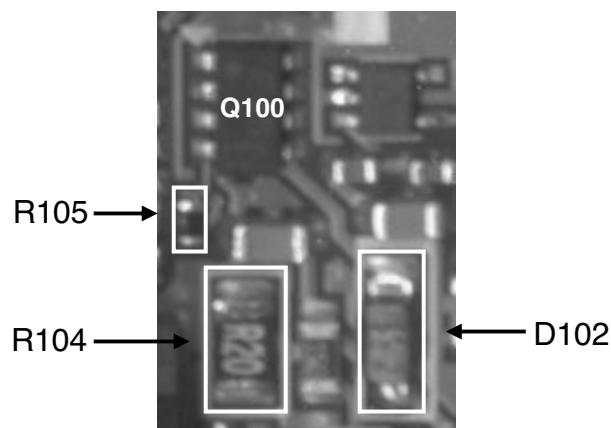
### Checking Flow



## 4. TROUBLE SHOOTING

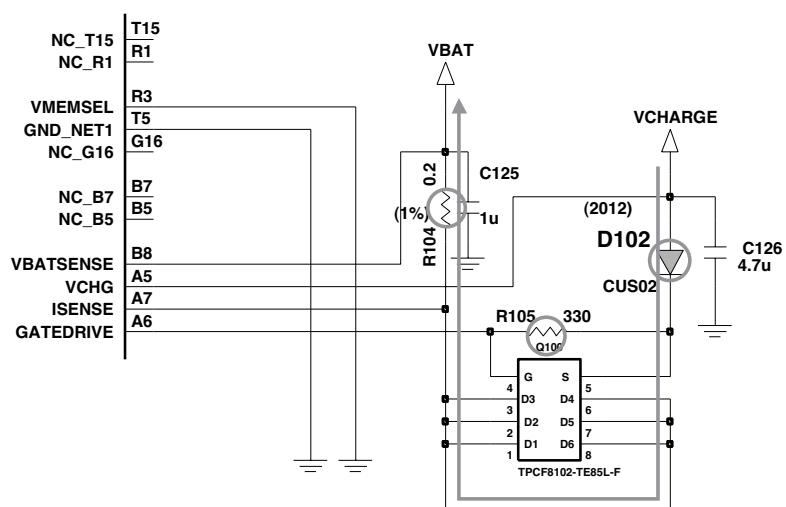
### 4.4 Charging Trouble

#### Test Points



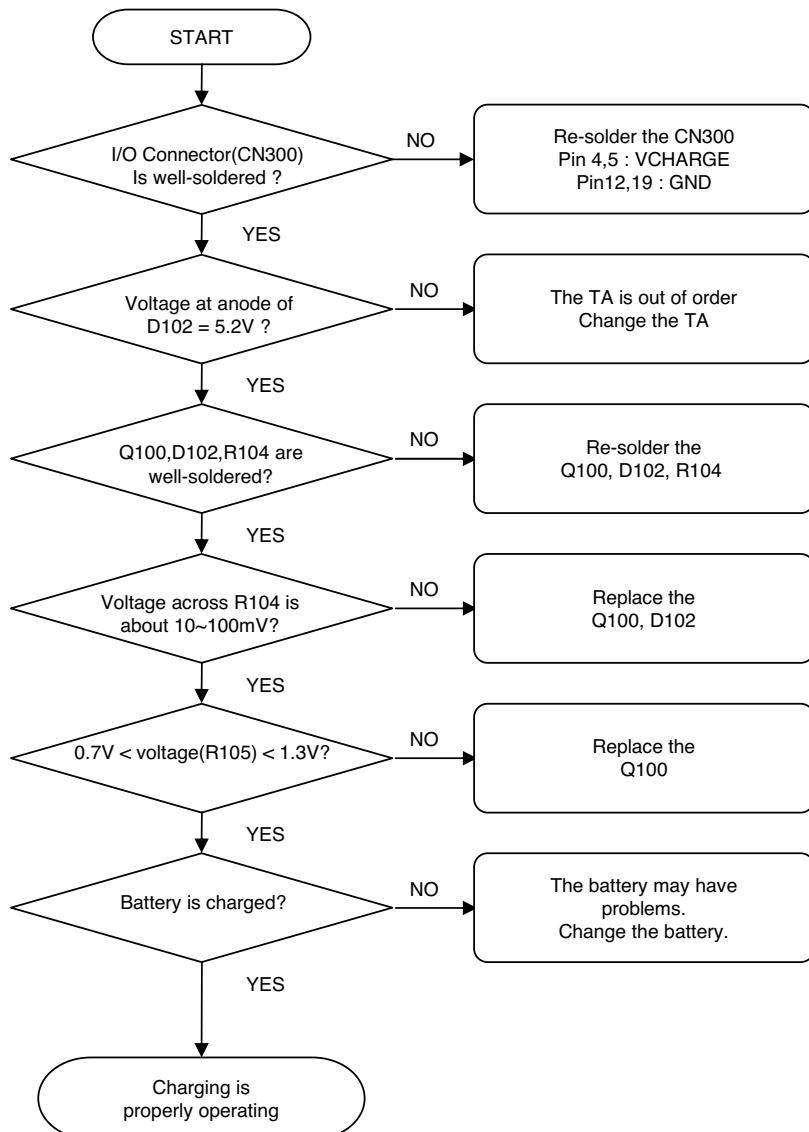
**Figure 4-15**

#### Circuit Diagram



## 4. TROUBLE SHOOTING

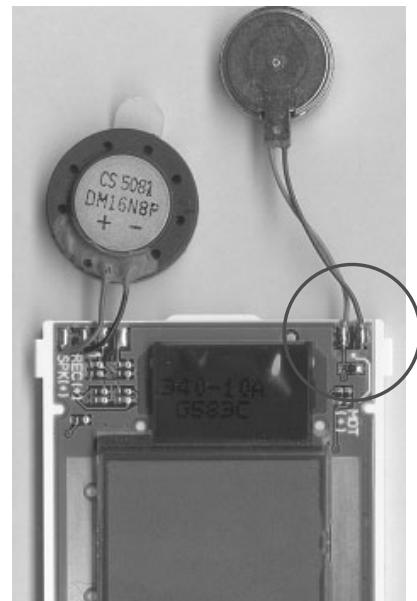
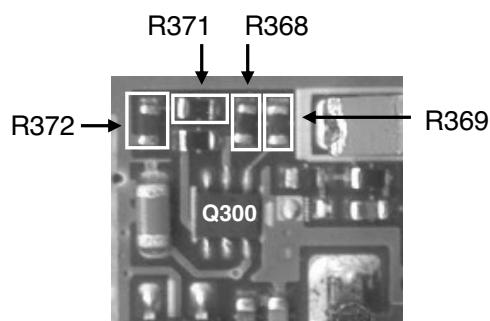
### Checking Flow



## 4. TROUBLE SHOOTING

### 4.5 Vibrator Trouble

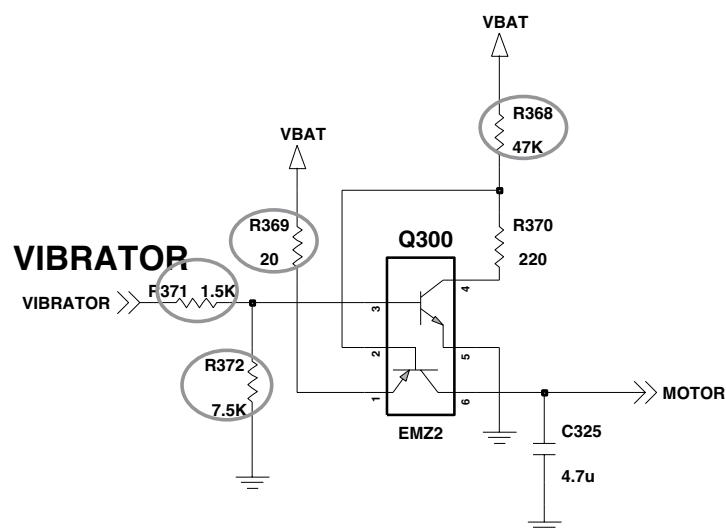
#### Test Points



Soldering C heck in LC D Module

Figure 4-16

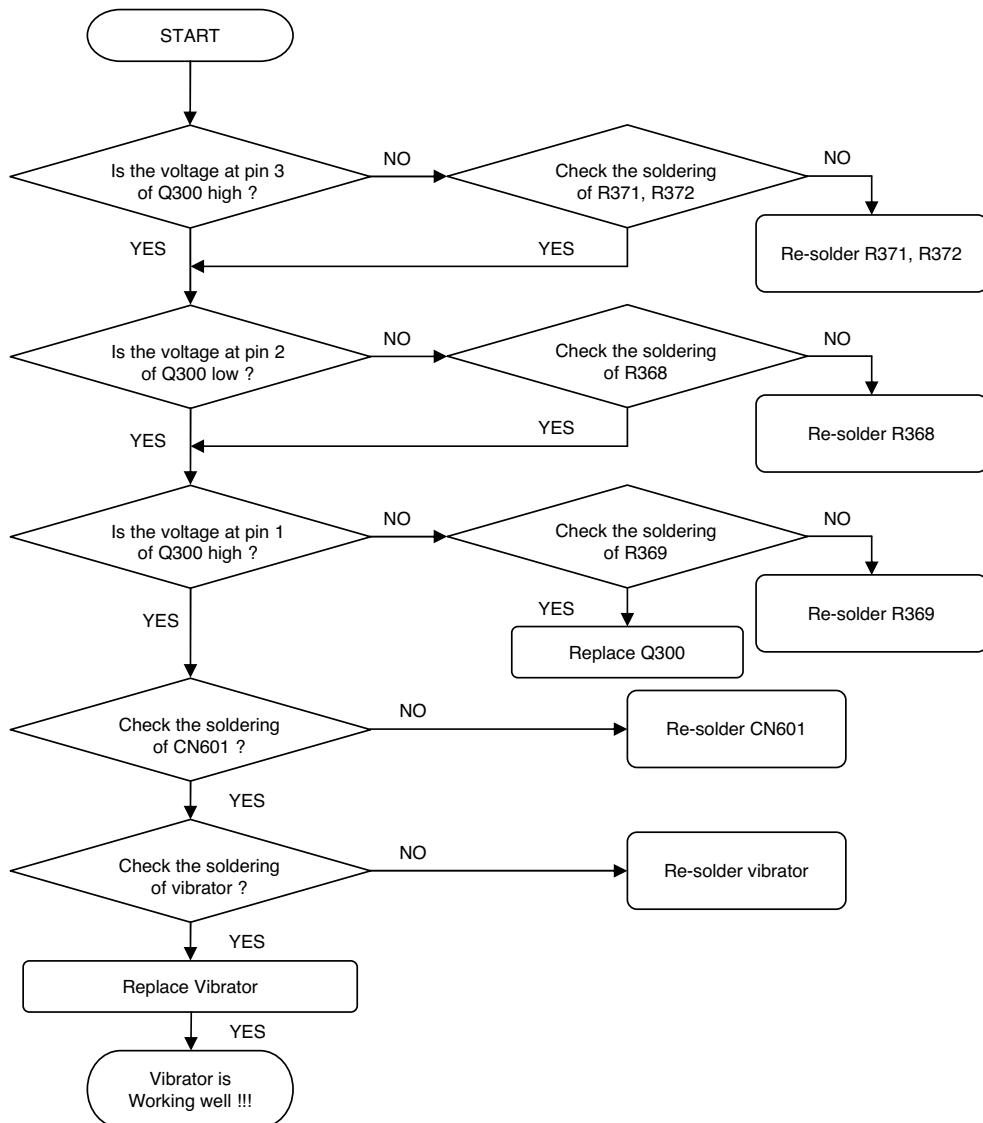
#### Circuit Diagram



## 4. TROUBLE SHOOTING

### Checking Flow

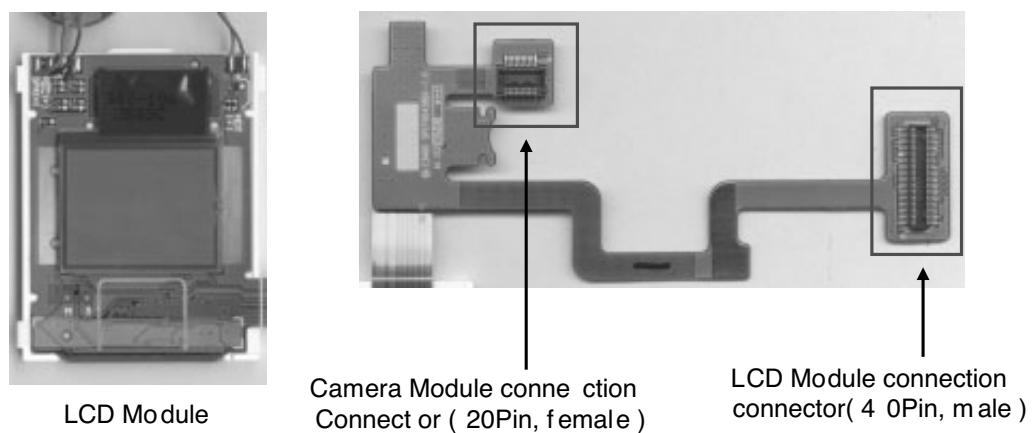
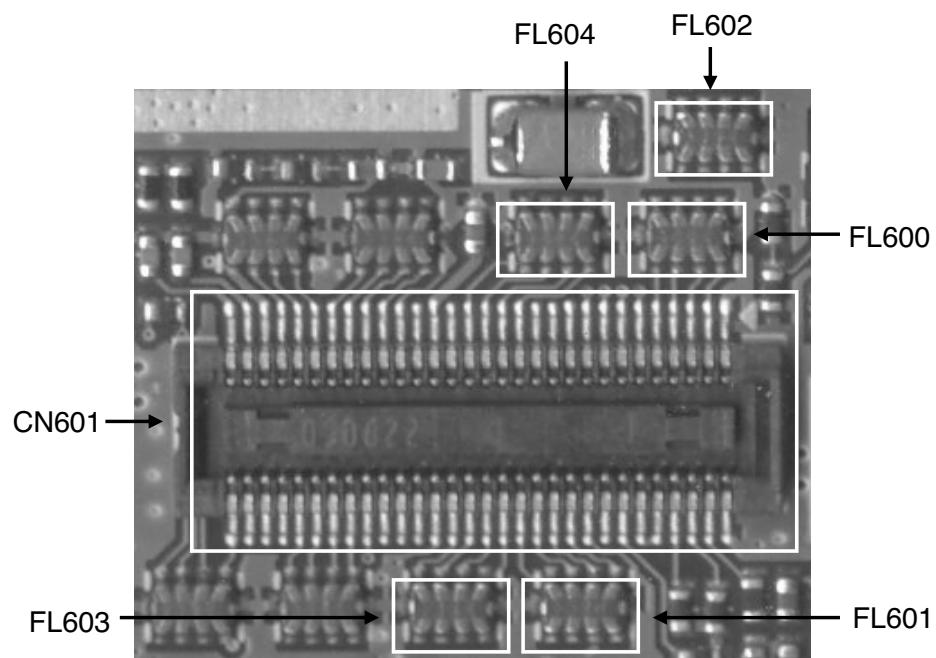
SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



## 4. TROUBLE SHOOTING

### 4.6 LCD Trouble

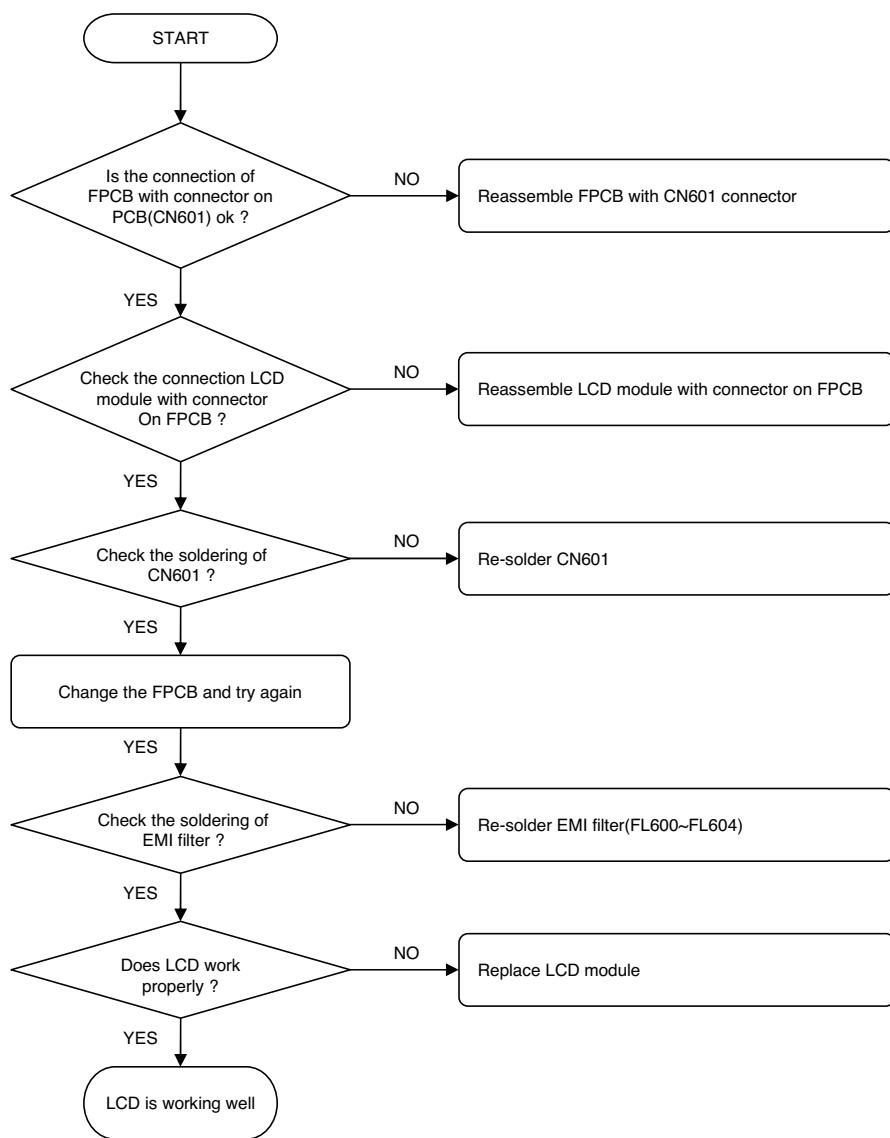
#### Test Points



**Figure 4-17**

## 4. TROUBLE SHOOTING

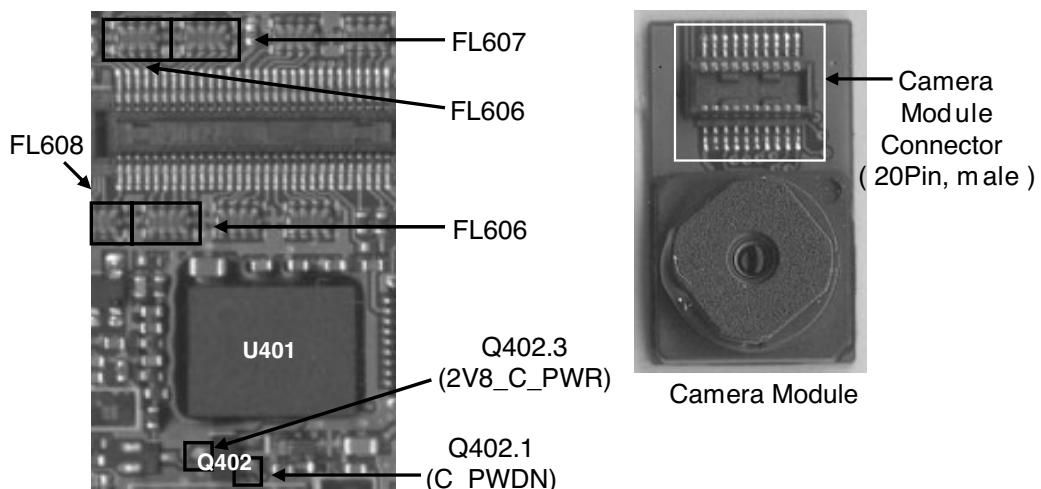
### Checking Flow



## 4. TROUBLE SHOOTING

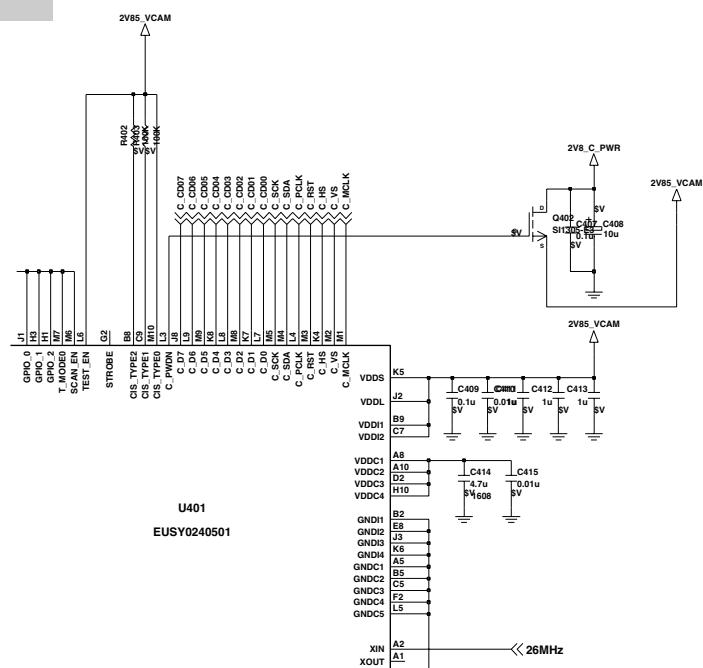
### 4.7 Camera Trouble

#### Test Points



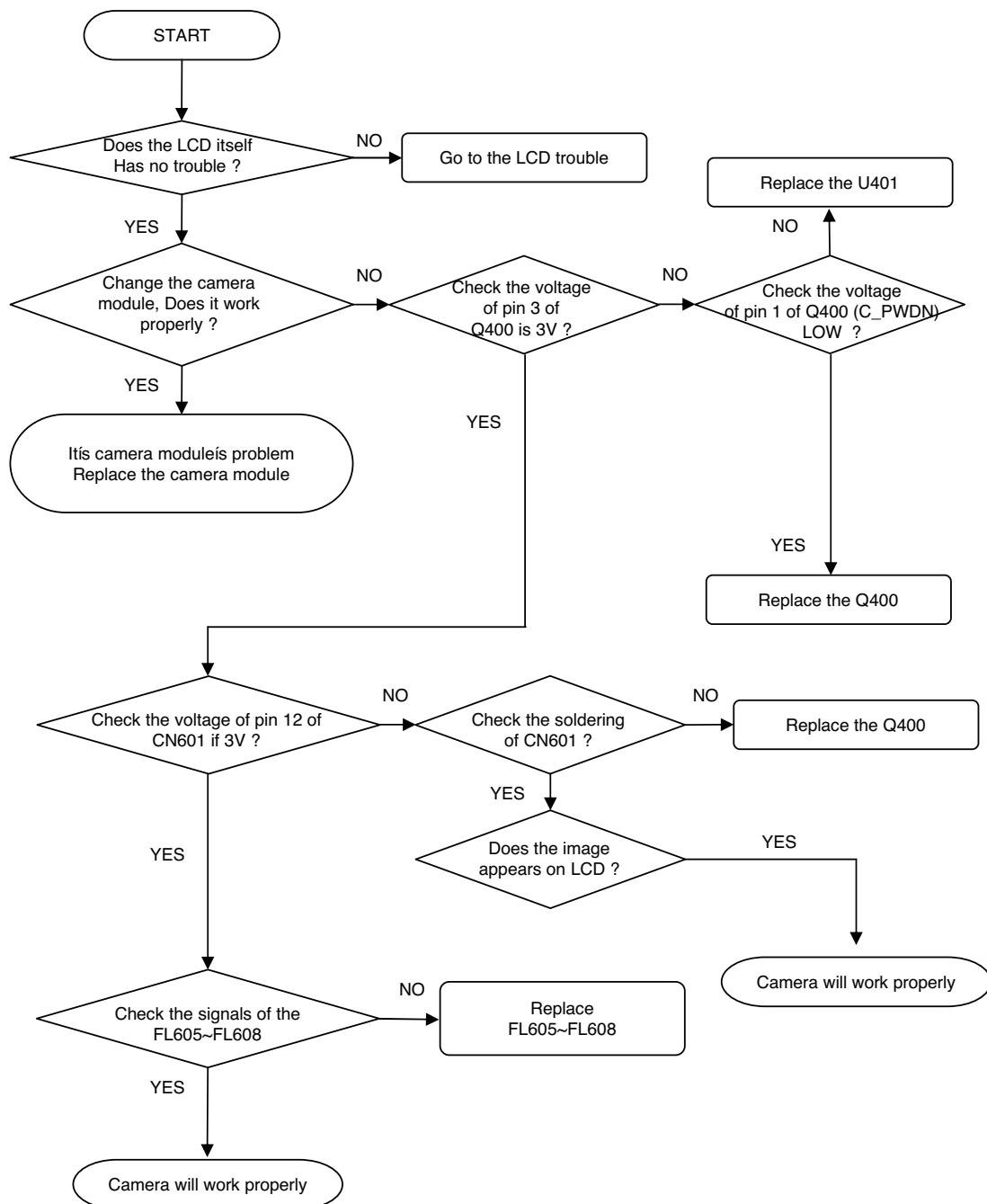
**Figure 4-18**

#### Circuit Diagram



## 4. TROUBLE SHOOTING

### Checking Flow



## 4. TROUBLE SHOOTING

### 4.8 Speaker Trouble

#### Test Points

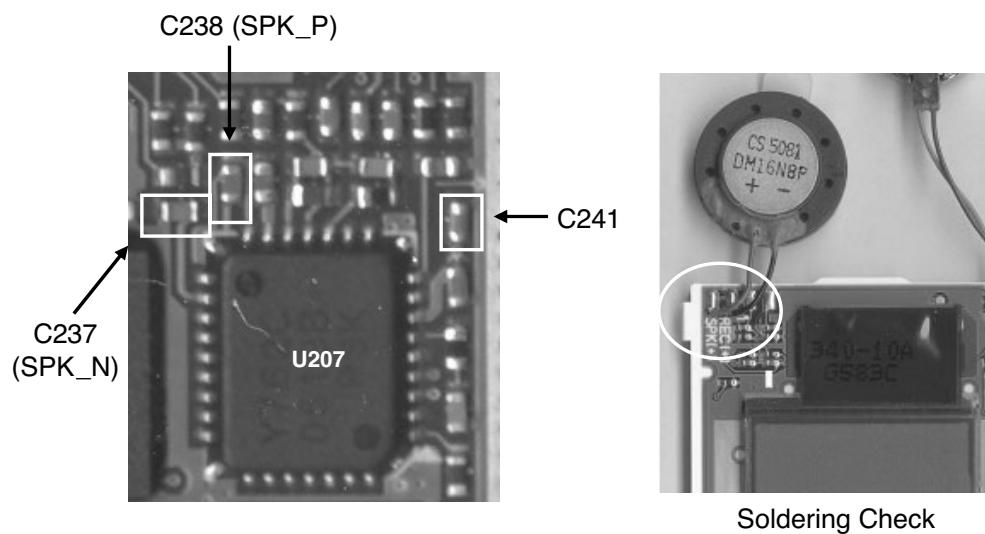
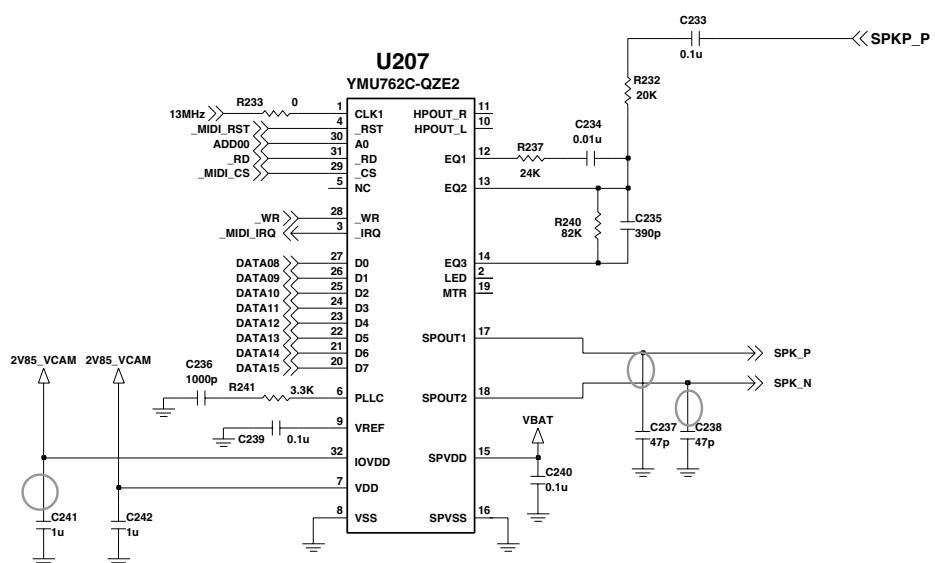


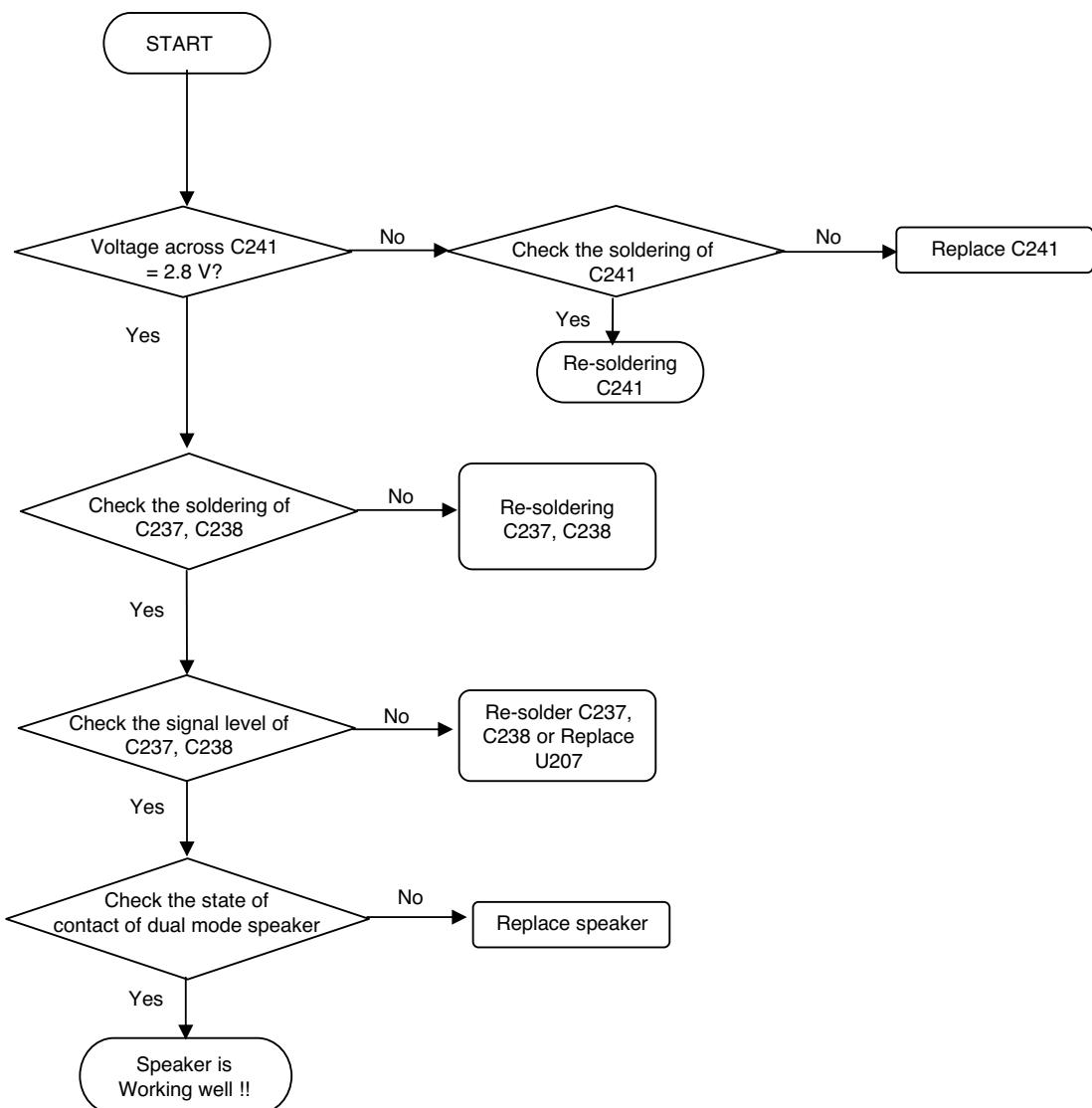
Figure 4-19

#### Circuit Diagram



## 4. TROUBLE SHOOTING

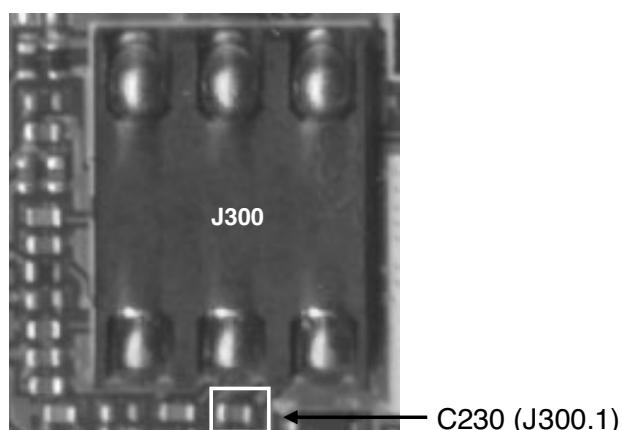
### Checking Flow



## 4. TROUBLE SHOOTING

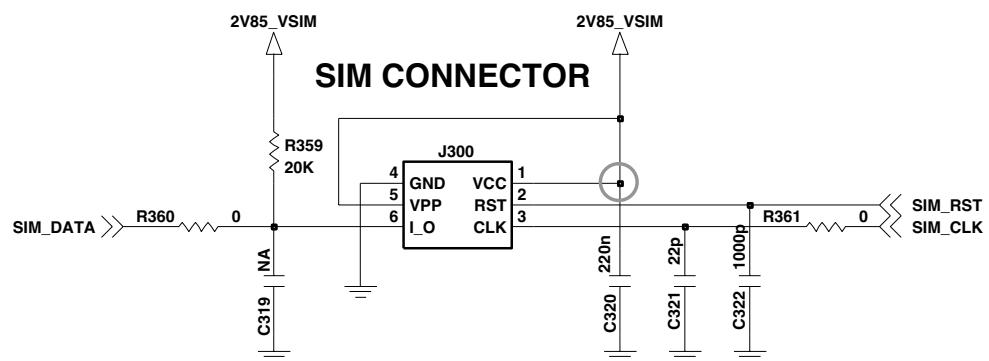
### 4.9 SIM Card Interface Trouble

#### Test Points



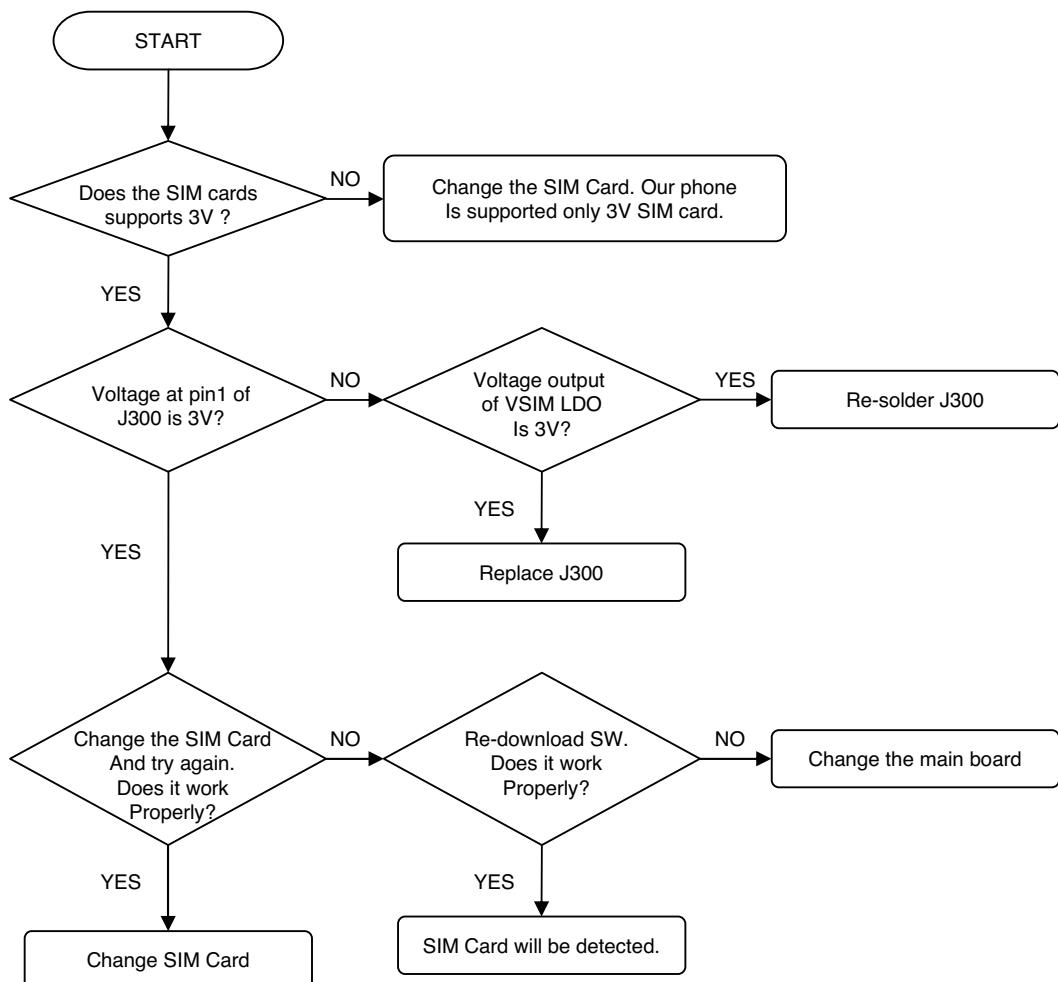
**Figure 4-20**

#### Circuit Diagram



## 4. TROUBLE SHOOTING

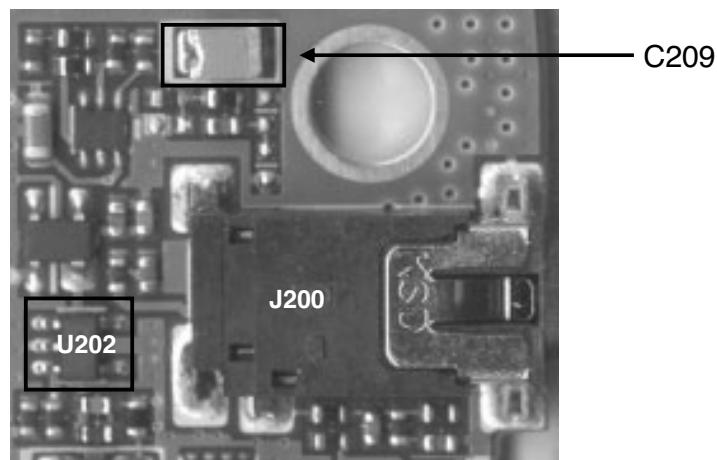
### Checking Flow



## 4. TROUBLE SHOOTING

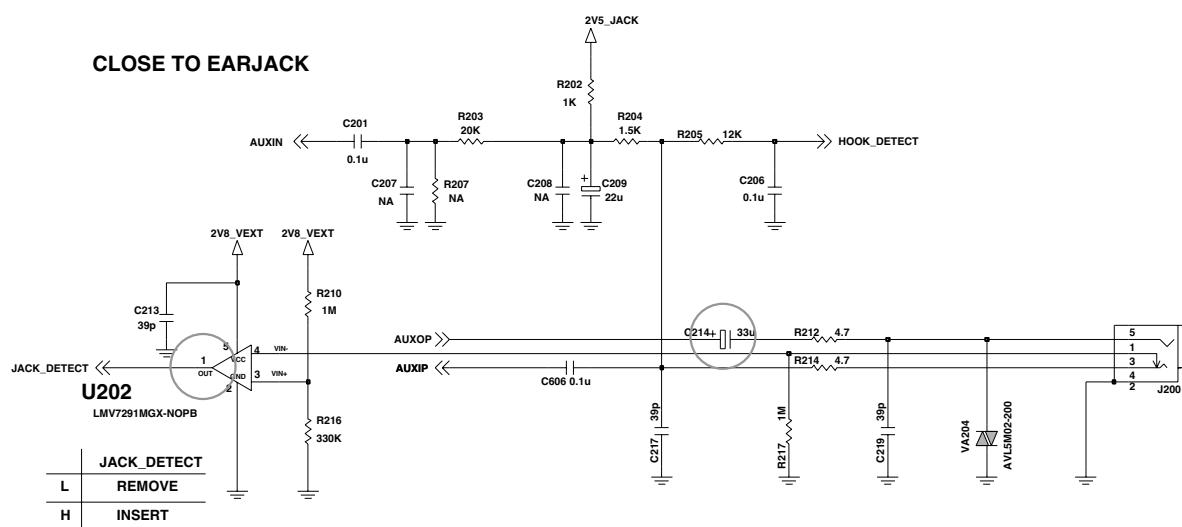
### 4.10 Earphone Trouble

#### Test Points



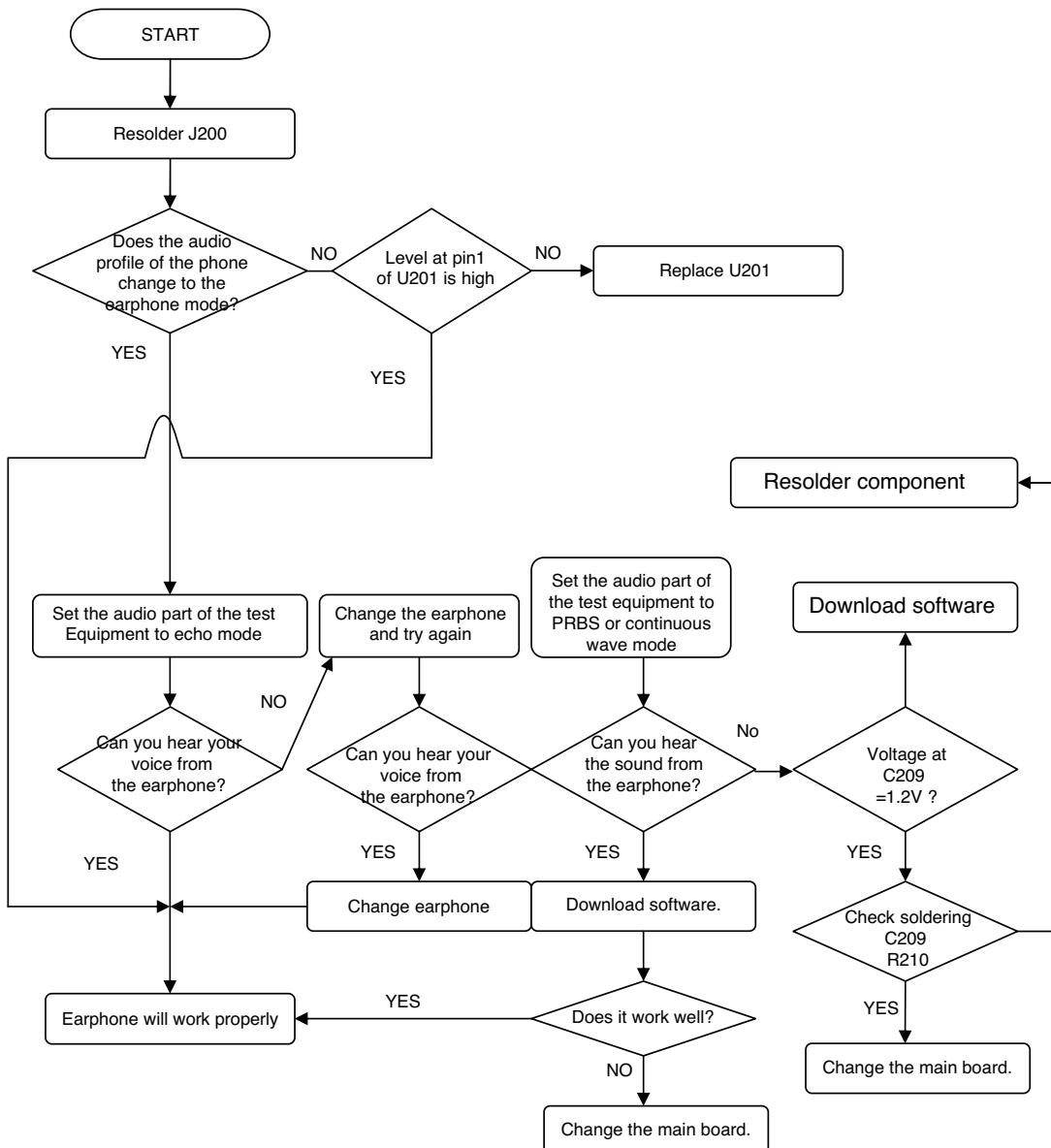
**Figure 4-21**

#### Circuit Diagram



## 4. TROUBLE SHOOTING

### Checking Flow



## 4. TROUBLE SHOOTING

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### 4.11 KEY backlight Trouble

#### Test Points

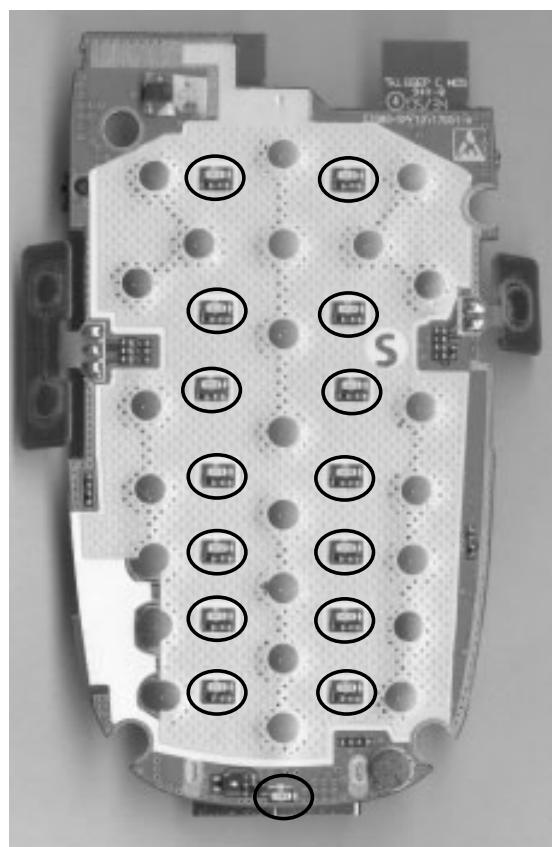
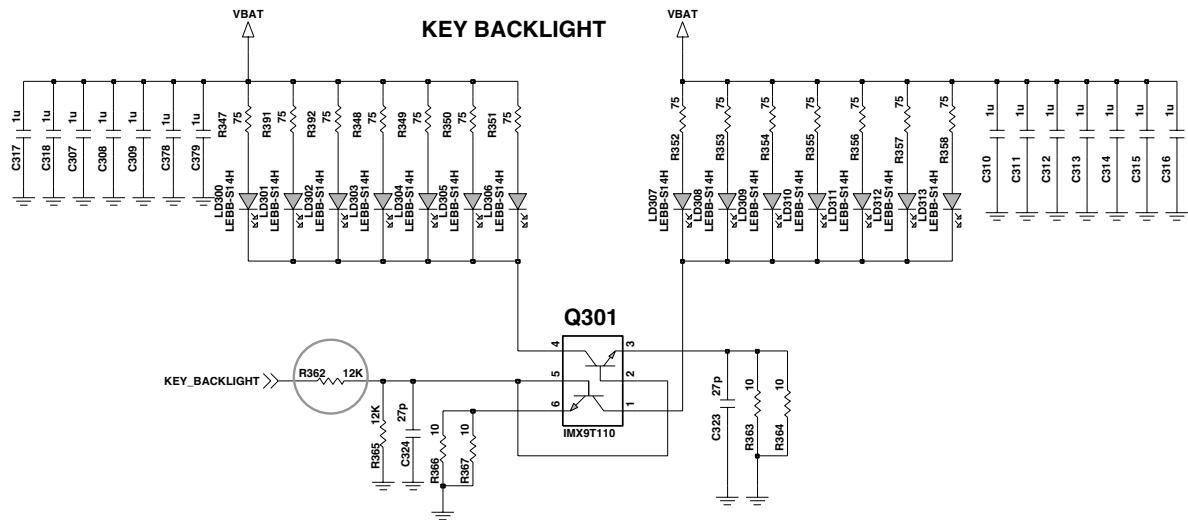


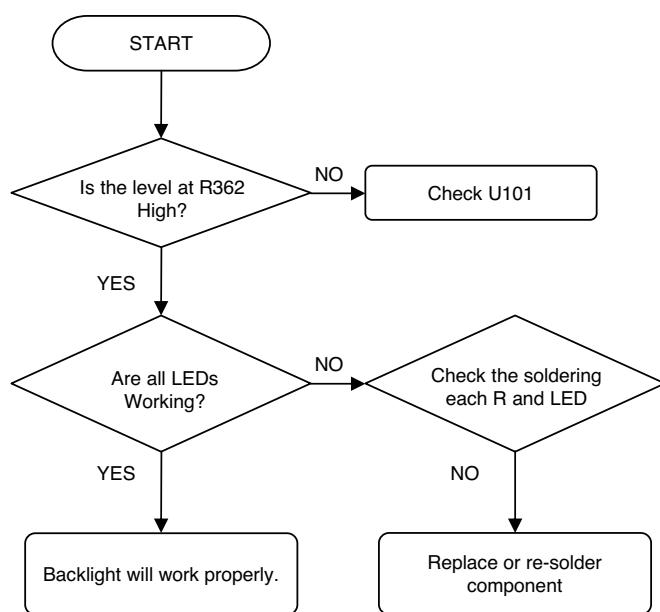
Figure 4-22

## 4. TROUBLE SHOOTING

### Circuit Diagram



### Checking Flow



## 4. TROUBLE SHOOTING

### 4.12 Receiver Trouble

#### Test Points

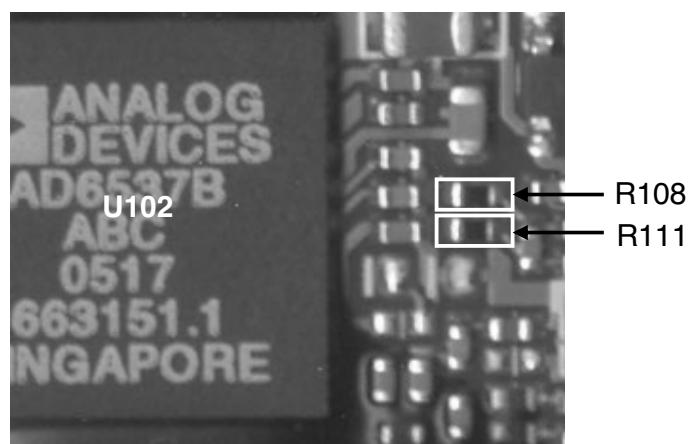
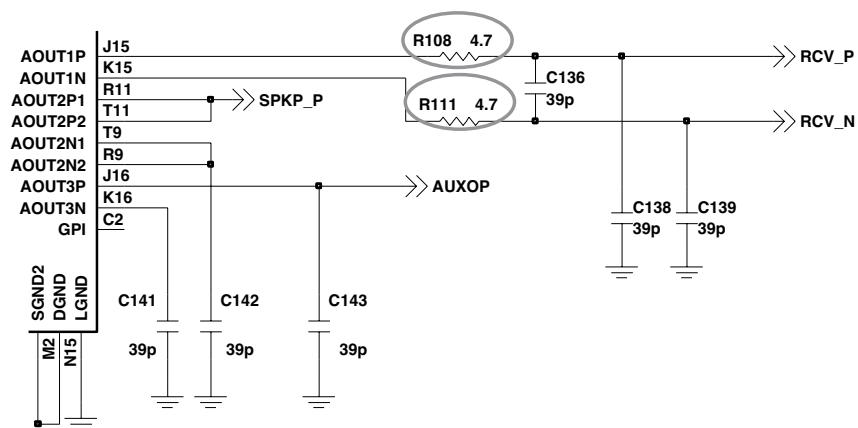


Figure 4-23

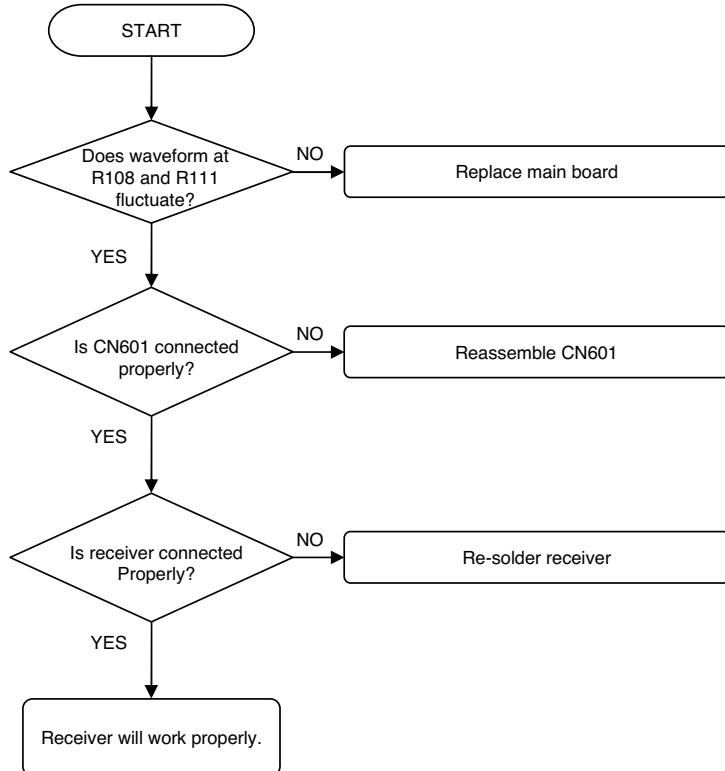
#### Circuit Diagram



## 4. TROUBLE SHOOTING

### Checking Flow

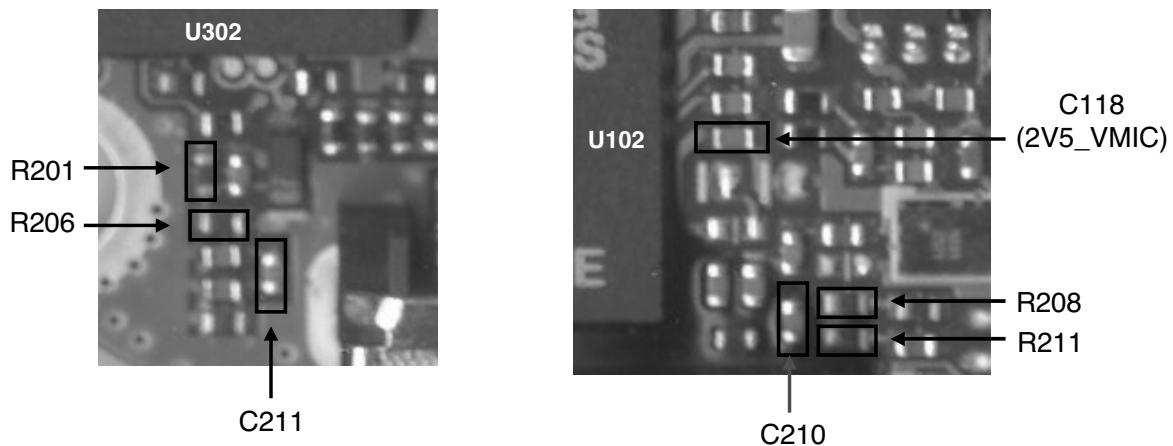
SETTING : After initialize Agilent 8960, Test EGSM, DCS mode  
Set the property of audio as PRBS or continuous wave. Set the receiving volume of mobile as Max.



## 4. TROUBLE SHOOTING

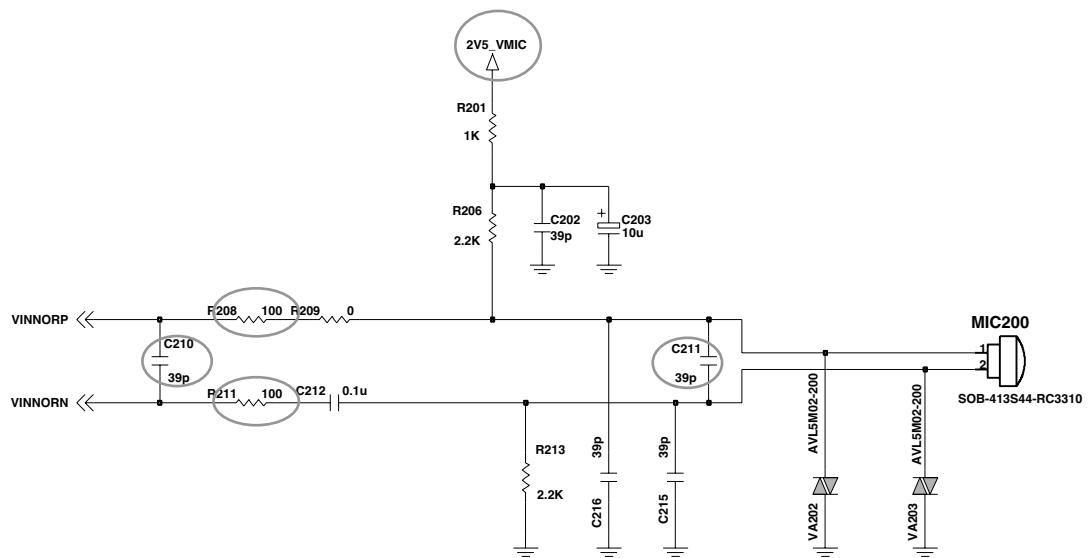
### 4.13 Microphone Trouble

#### Test Points



**Figure 4-24**

#### Circuit Diagram

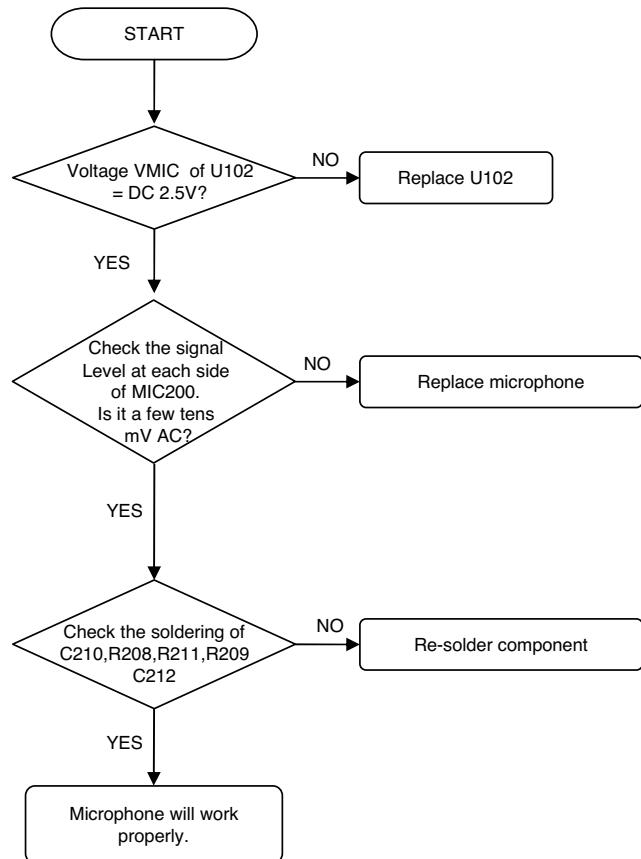


**CLOSE TO MIC**

## 4. TROUBLE SHOOTING

### Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode



## 4. TROUBLE SHOOTING

### 4.14 RTC Trouble

#### Test Points

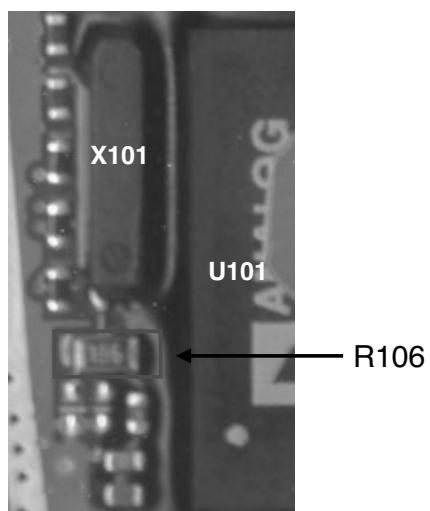
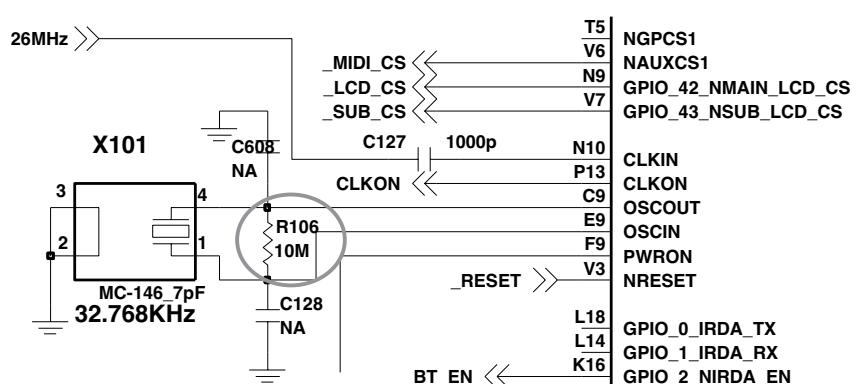


Figure 4-25

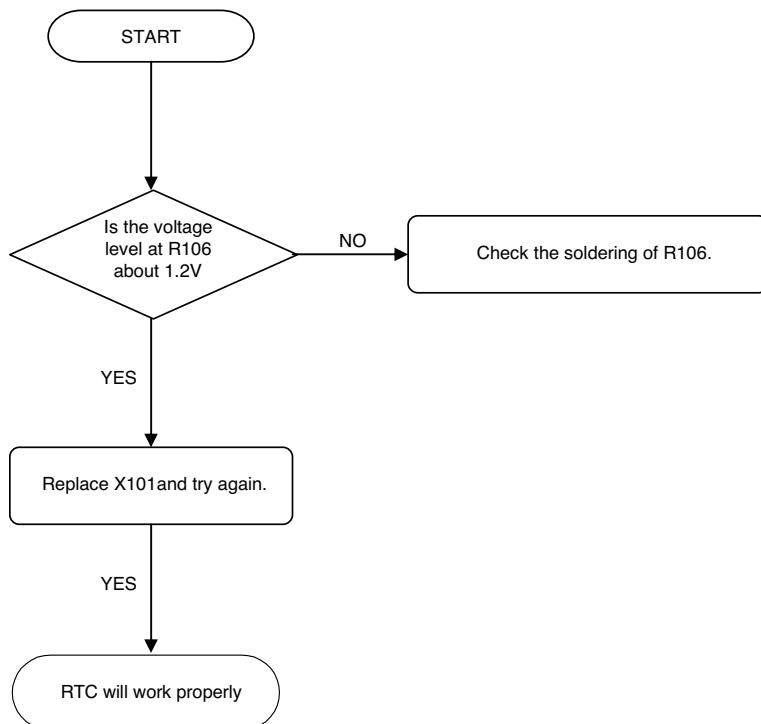
#### Circuit Diagram



## 4. TROUBLE SHOOTING

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### Checking Flow



## 4. TROUBLE SHOOTING

### 4.15 Indication LED Trouble

#### Test Points

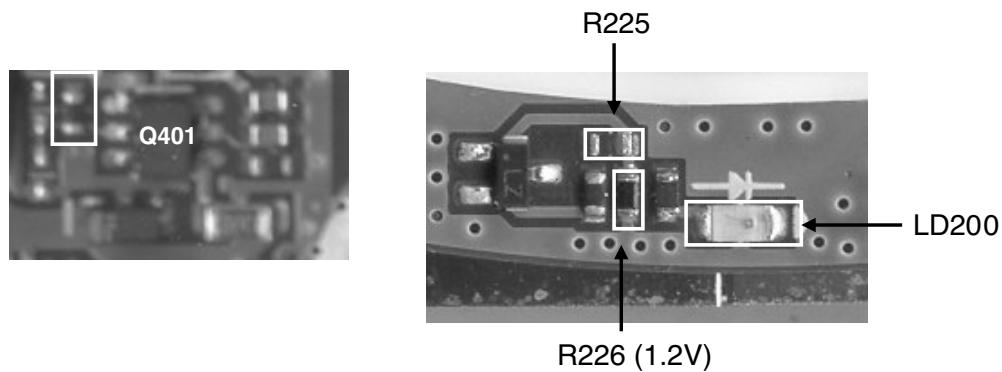
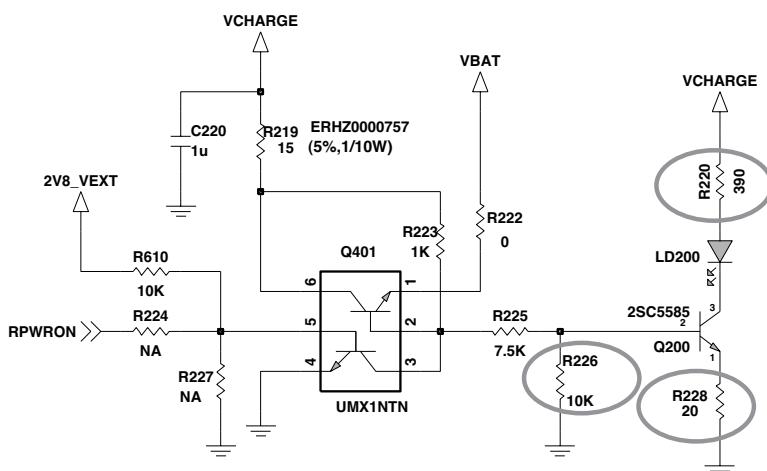


Figure 4-26

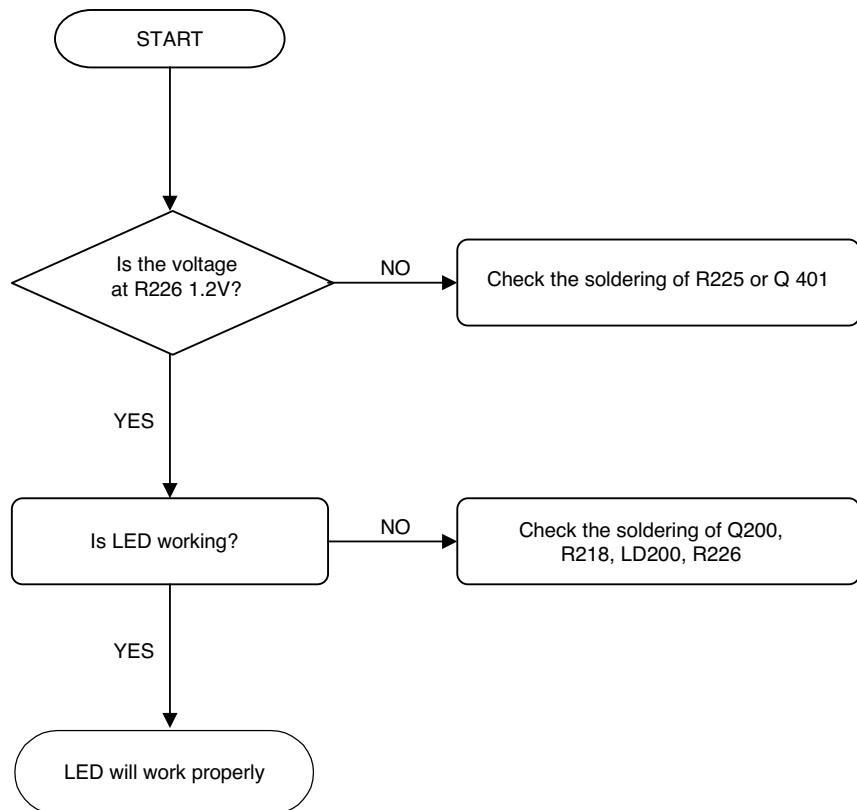
#### Circuit Diagram



## 4. TROUBLE SHOOTING

### Checking Flow

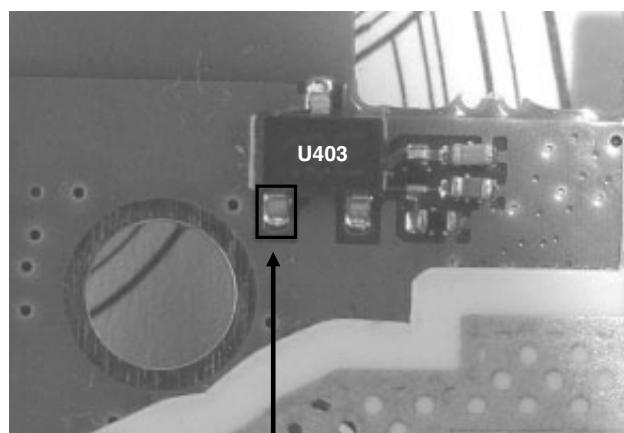
Indication LED only operates in trickle charging mode.



## 4. TROUBLE SHOOTING

### 4.16 Folder on/off Trouble

#### Test Points

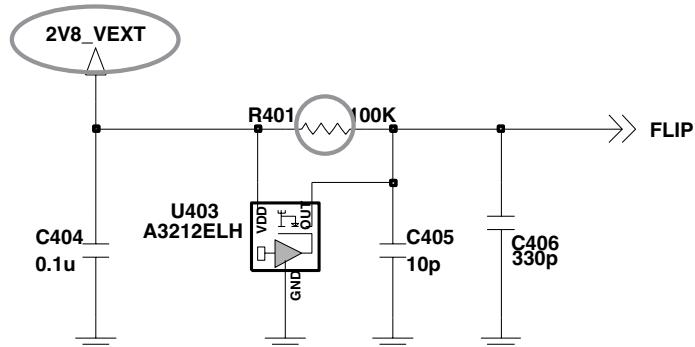


U403.1

Figure 4-27

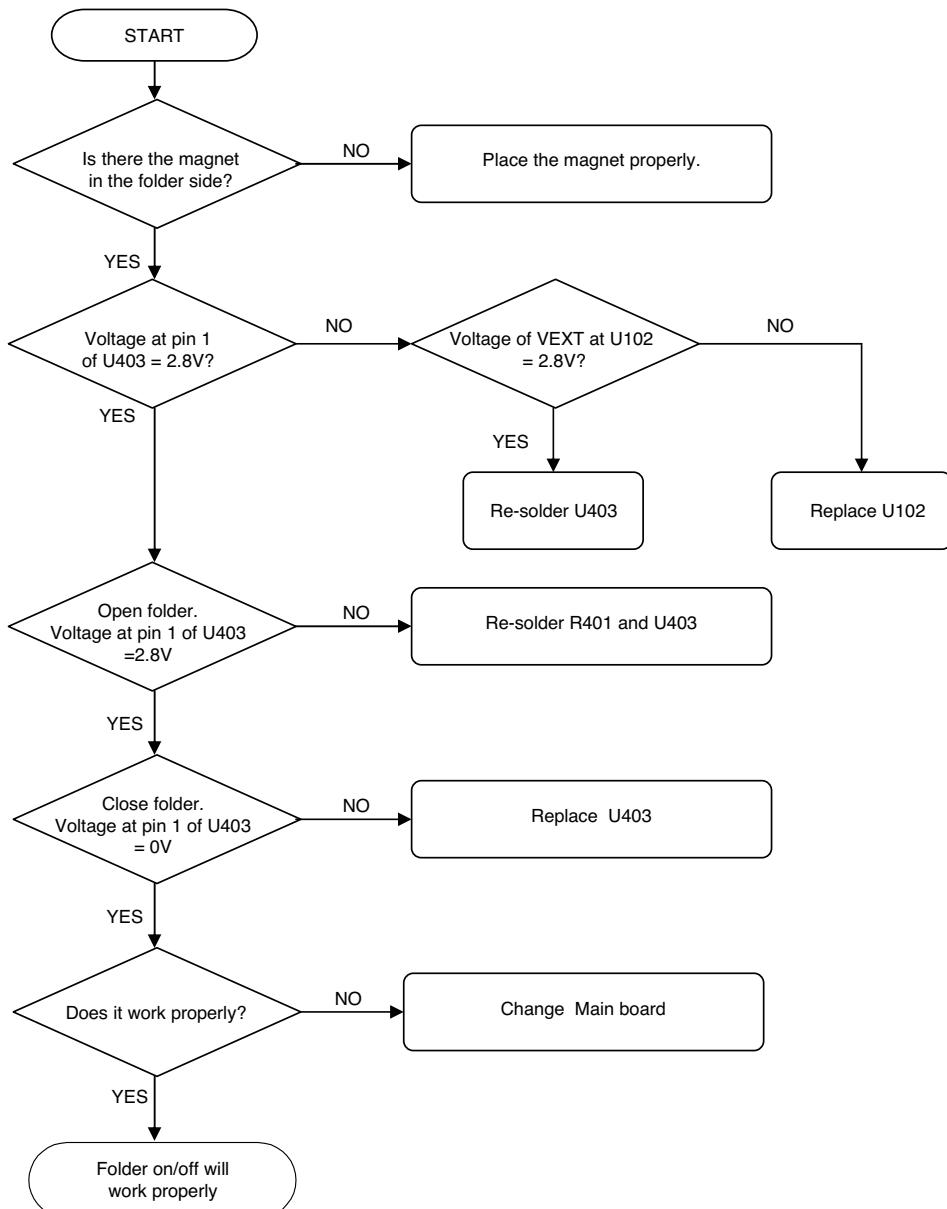
#### Circuit Diagram

### FLIP SWITCH



## 4. TROUBLE SHOOTING

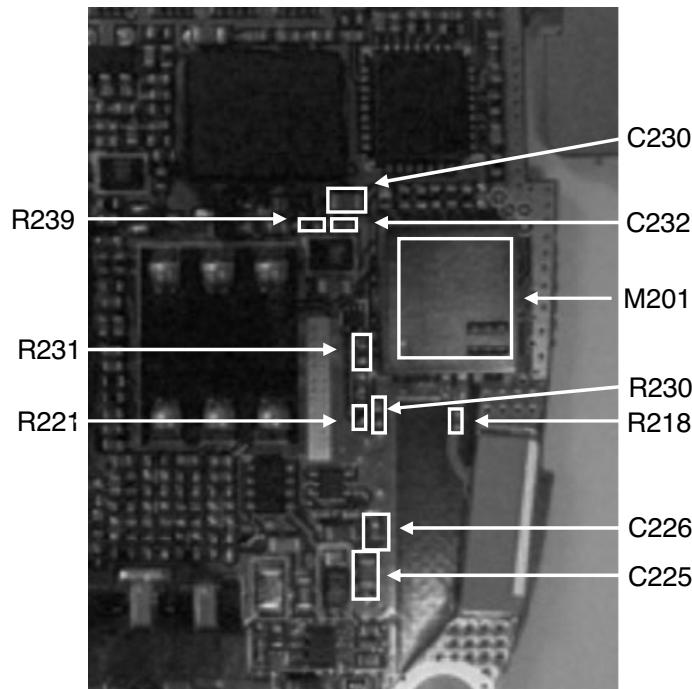
### Checking Flow



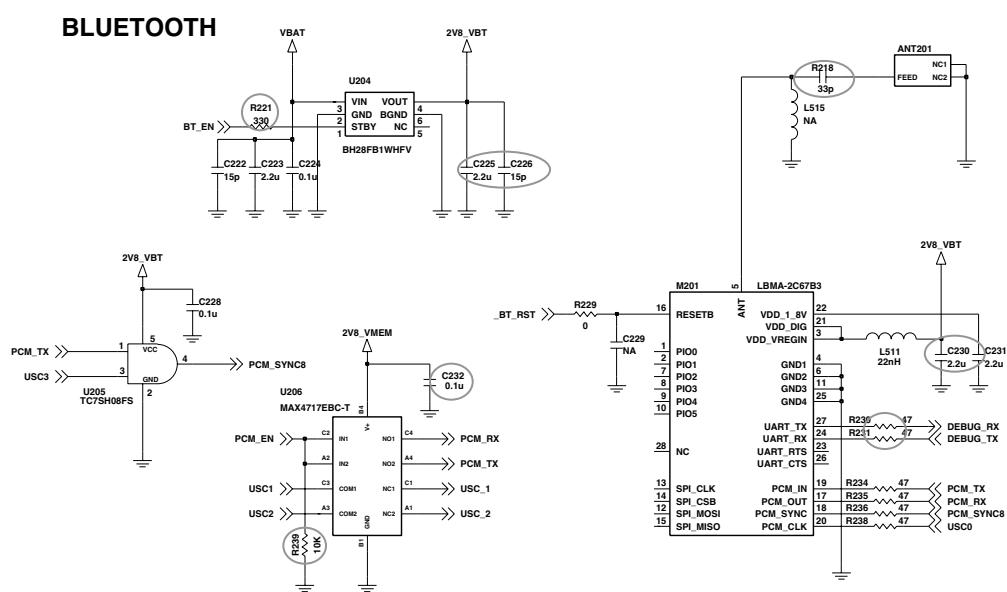
## 4. TROUBLE SHOOTING

### 4.17 Bluetooth Trouble

#### Test Points

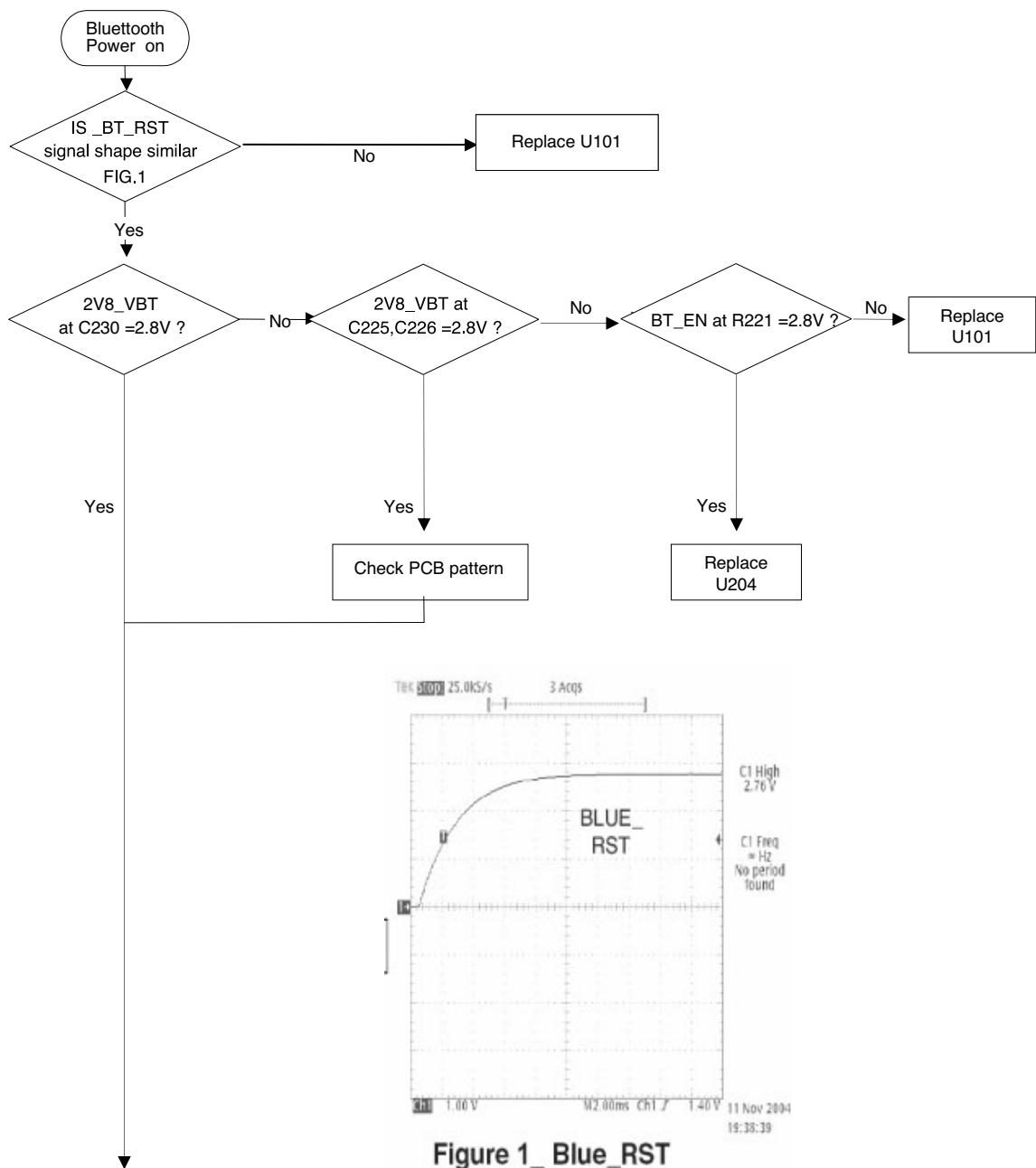


#### Circuit Diagram



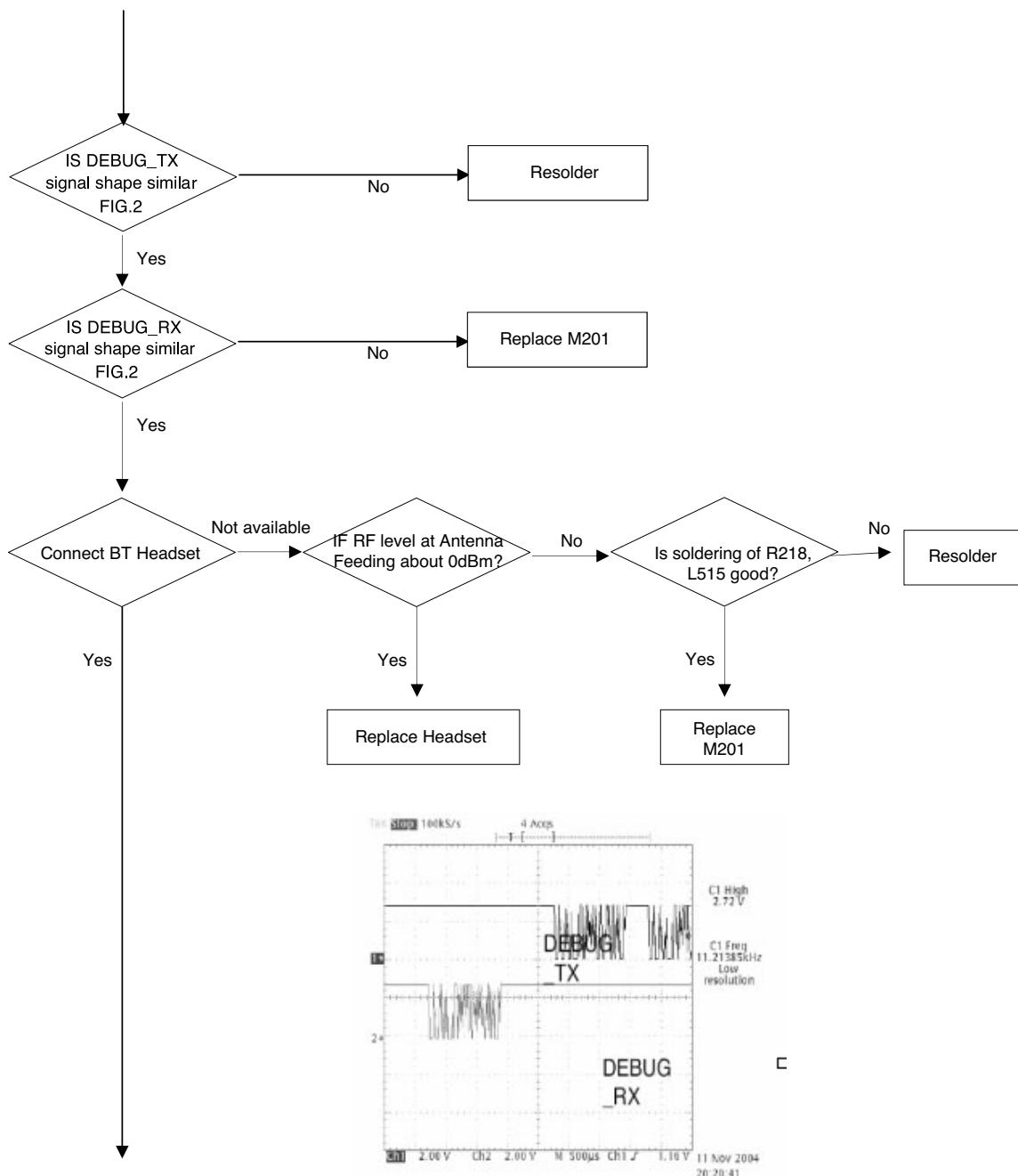
## 4. TROUBLE SHOOTING

### Checking Flow



## 4. TROUBLE SHOOTING

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## 4. TROUBLE SHOOTING

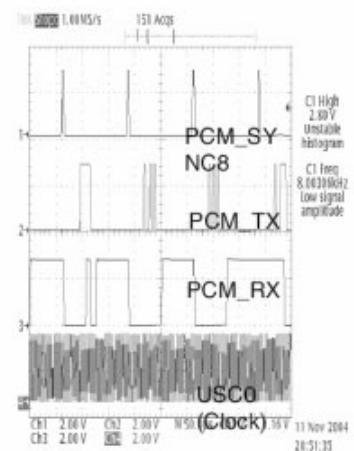
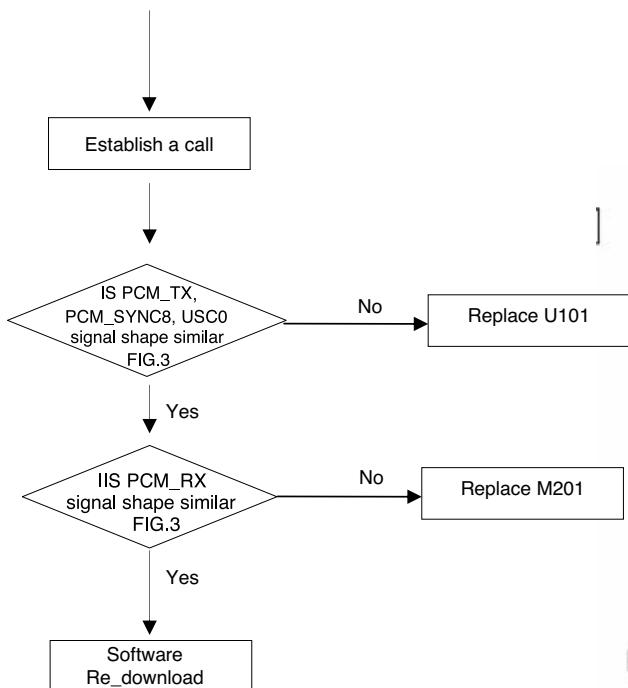


Figure 3\_PCM\_SYNCS, Tx, Rx, USC0

## 5. DOWNLOAD AND CALIBRATION

---

## 5. DOWNLOAD AND CALIBRATION

### 5.1 Download

#### A. Download Setup

Figure 5-1 describes Download setup

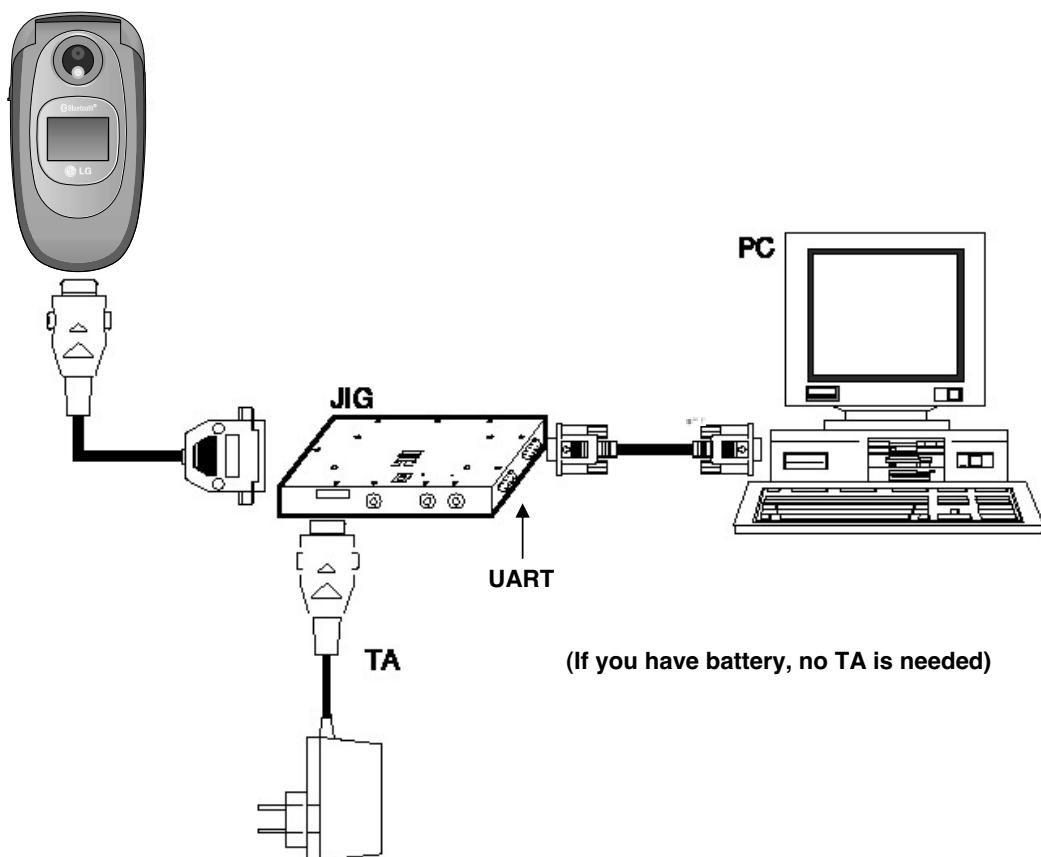
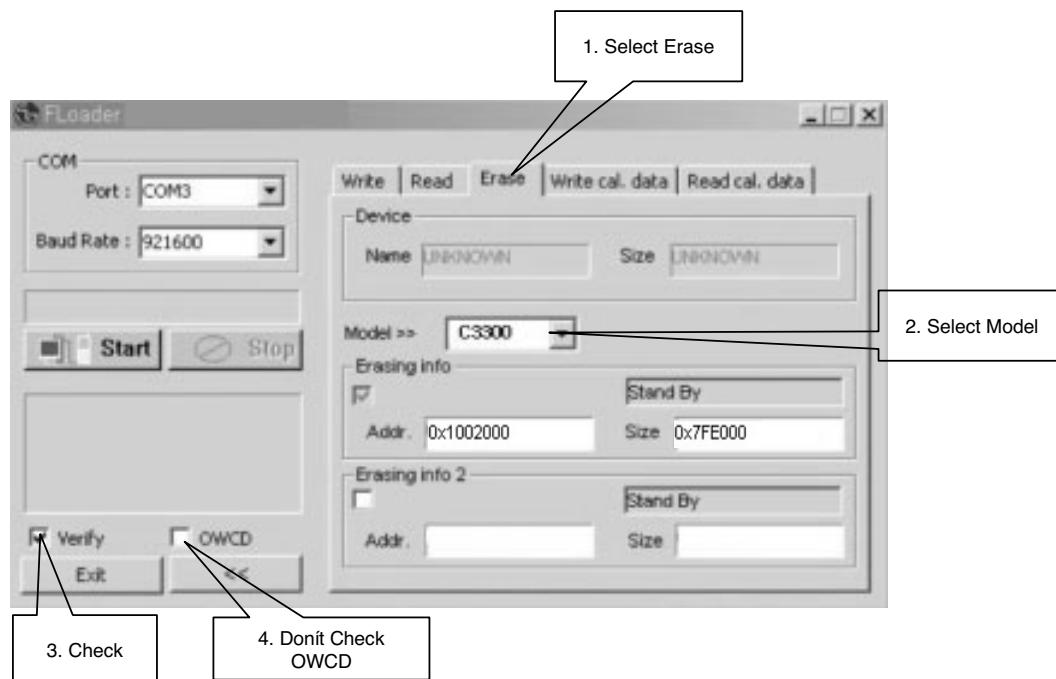


Figure 5-1. Download Setup

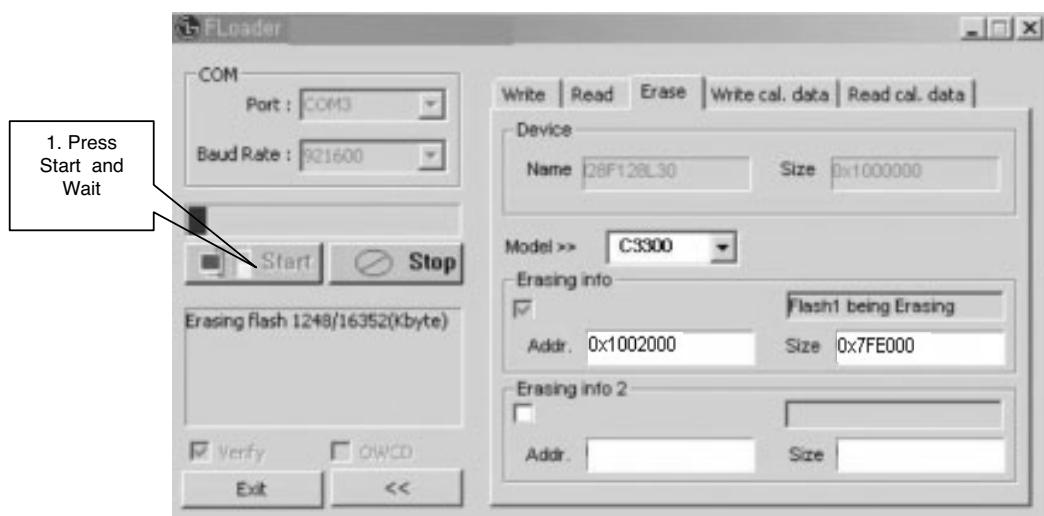
## 5. DOWNLOAD AND CALIBRATION

### B. Download Procedure

1. Access Flash loader program in PC and select Erase.(Don't check OWCD)

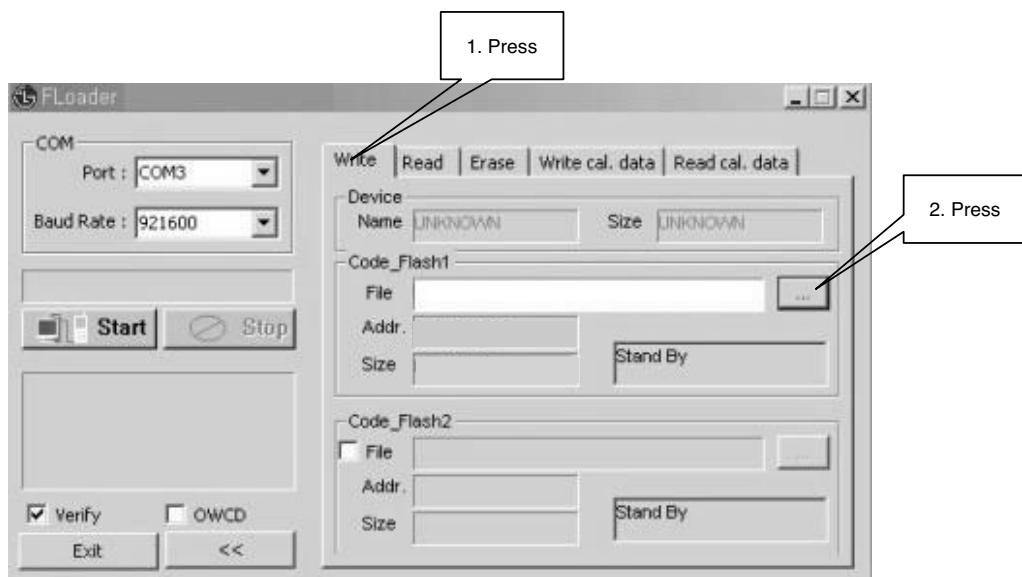


2. Press Start and Wait until Erase is completed.

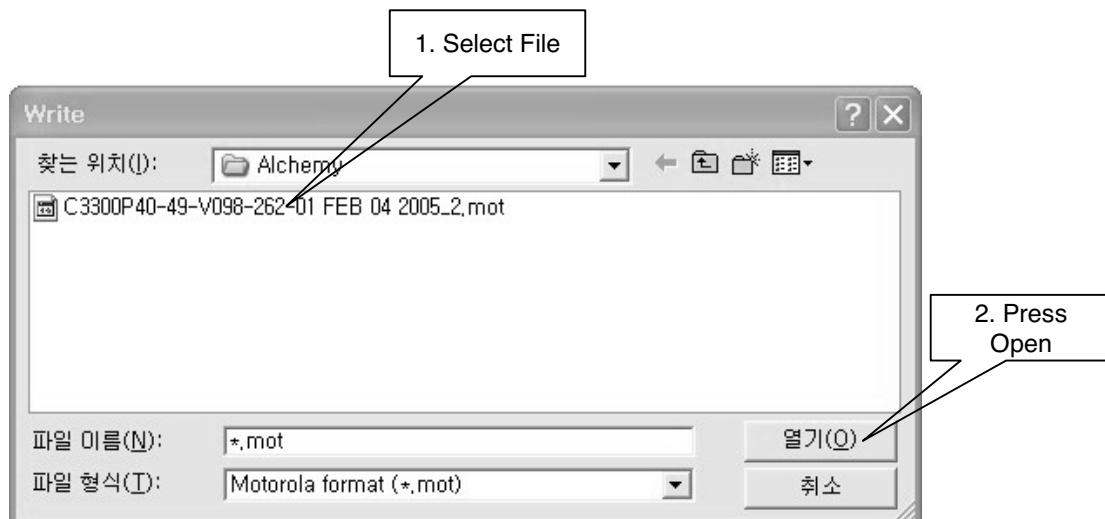


## 5. DOWNLOAD AND CALIBRATION

3. Press Write to start Download and press  Key to choose software (AlchemyData.mot)

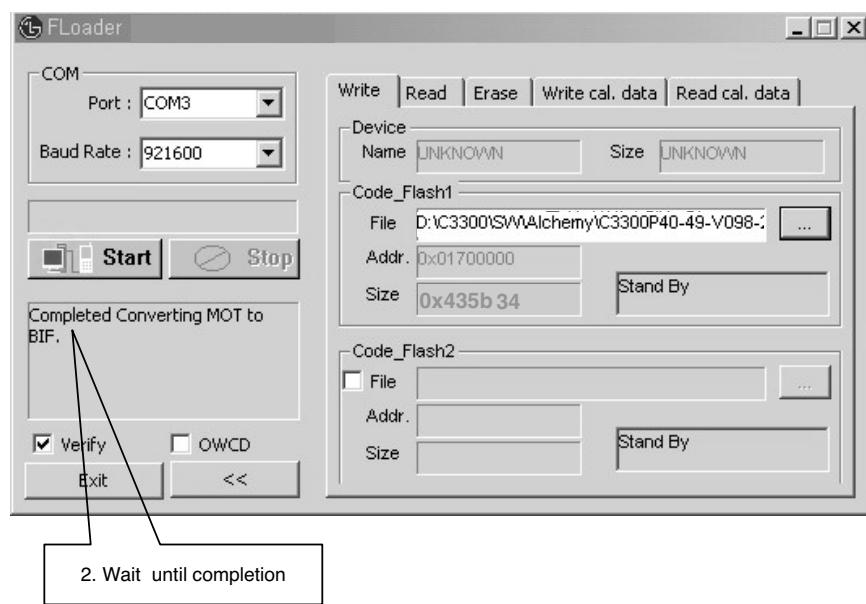


4. Choose software

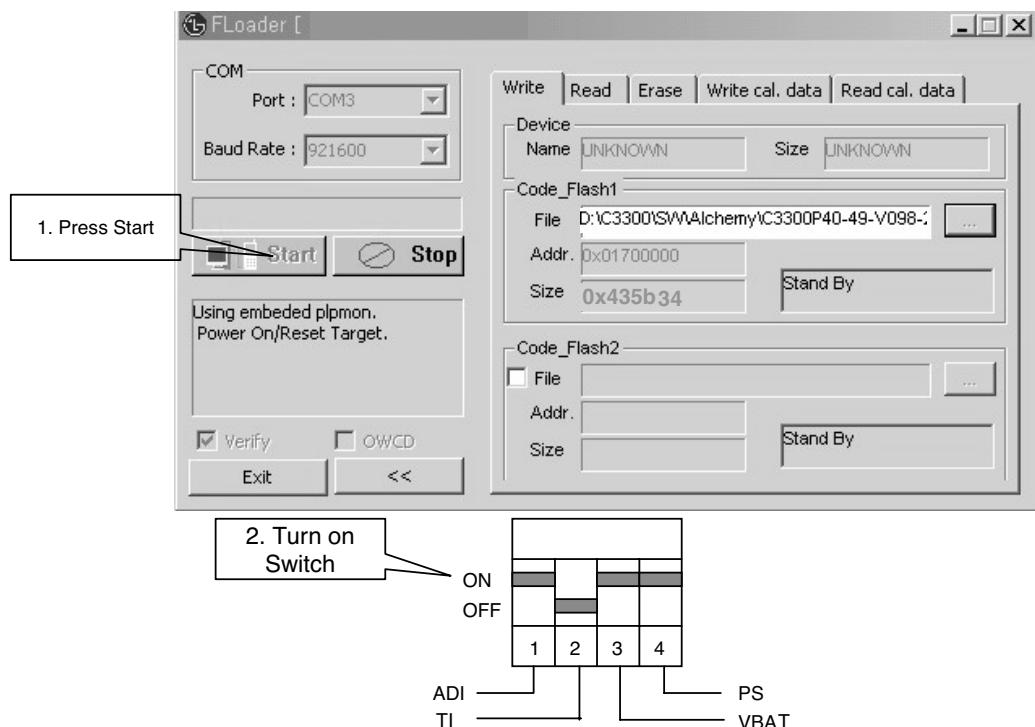


## 5. DOWNLOAD AND CALIBRATION

5. Wait until converting from MOT to BIF is completed(Don't check OWCD)

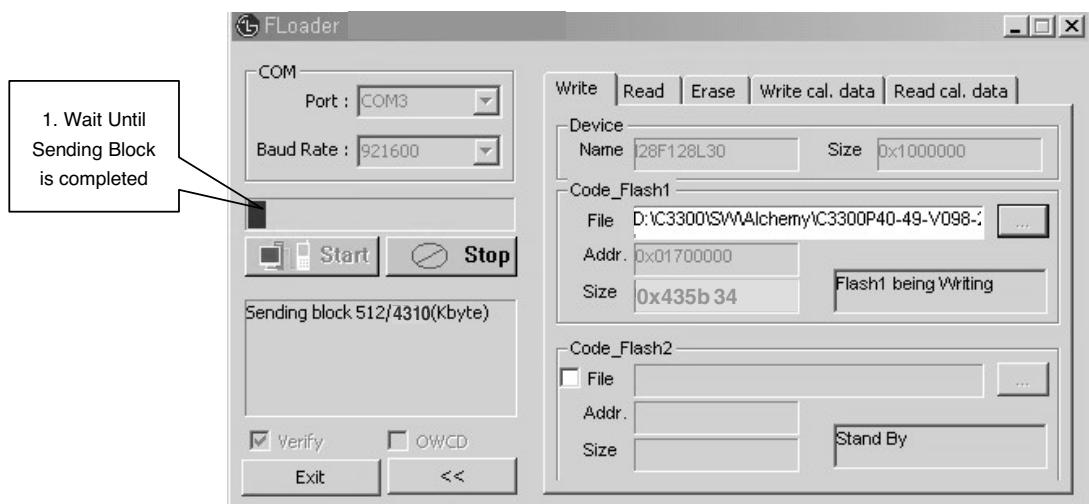


6. Press Start and Power on the phone using JIG remote Power on(Switch 1)

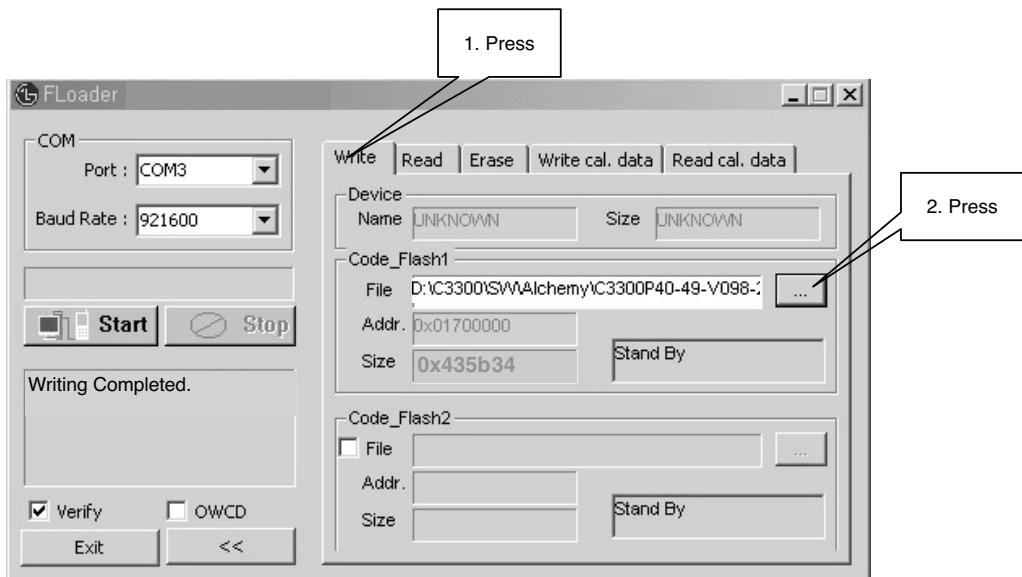


## 5. DOWNLOAD AND CALIBRATION

7. Wait until Sending Block is completed

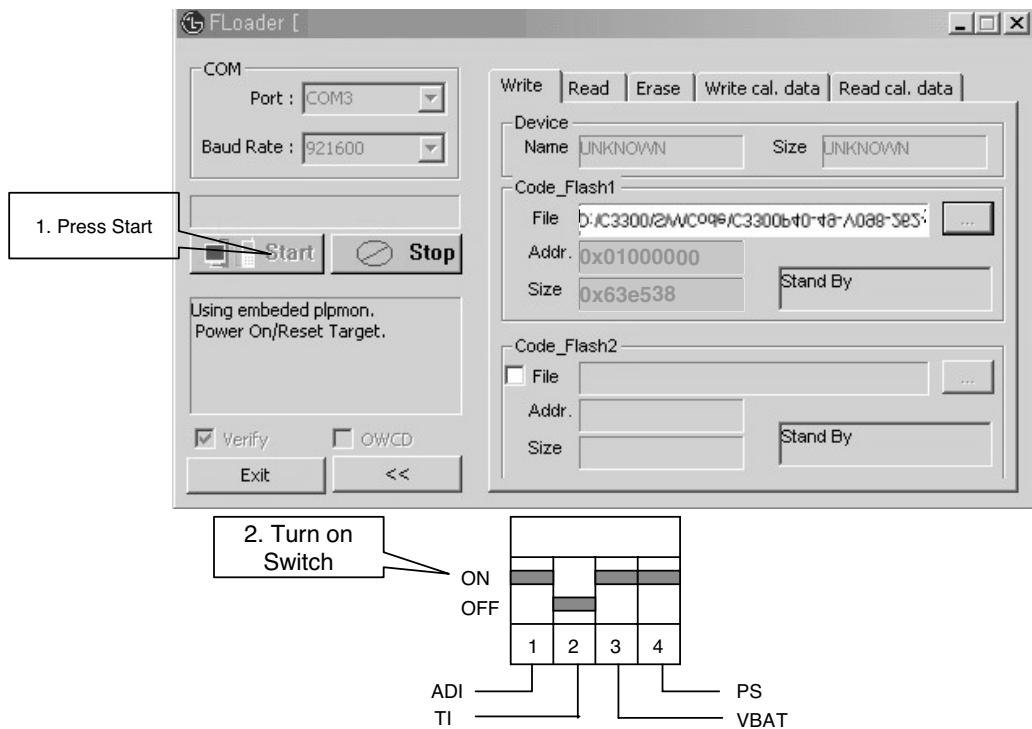


8. Press Write to start Download and press Key to choose software(CodeData.mot)

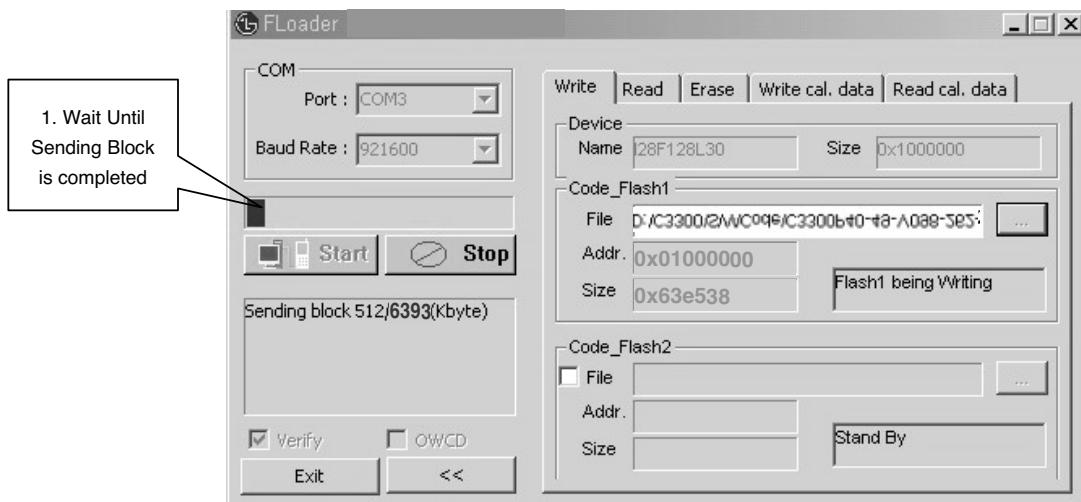


## 5. DOWNLOAD AND CALIBRATION

9. Choose software, Press Start and Power on the phone using JIG remote Power on(Switch 1)



10. Wait until Sending Block is completed



## 5. DOWNLOAD AND CALIBRATION

---

### 5.2 Calibration

#### A. Equipment List

Table 5-1. Calibration Equipment List.

Equipment for Calibration	Type / Model	Brand
Wireless Communication Test Set	HP-8960	Agilent
RS-232 Cable and Test JIG		LG
RF Cable		LG
Power Supply	HP-66311B	Agilent
GPIO interface card	HP-GPIB	Agilent
Calibration & Final test software		LG
Test SIM Card		
PC (for Software Installation)	Pentium II class above 300MHz	

#### B. Equipment Setup

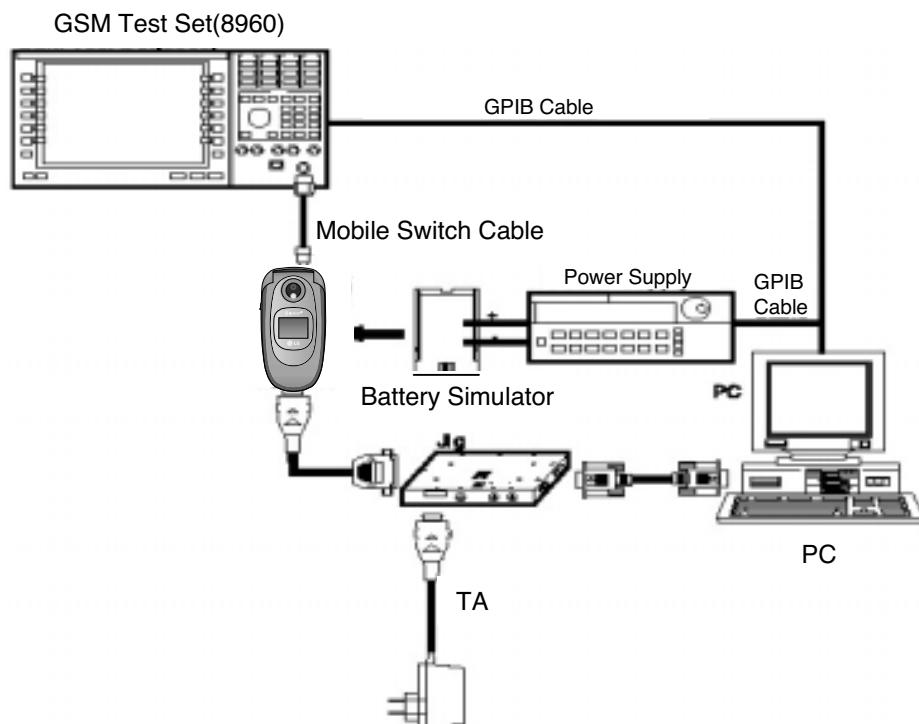


Figure 5-2. Equipment Setup

## 5. DOWNLOAD AND CALIBRATION

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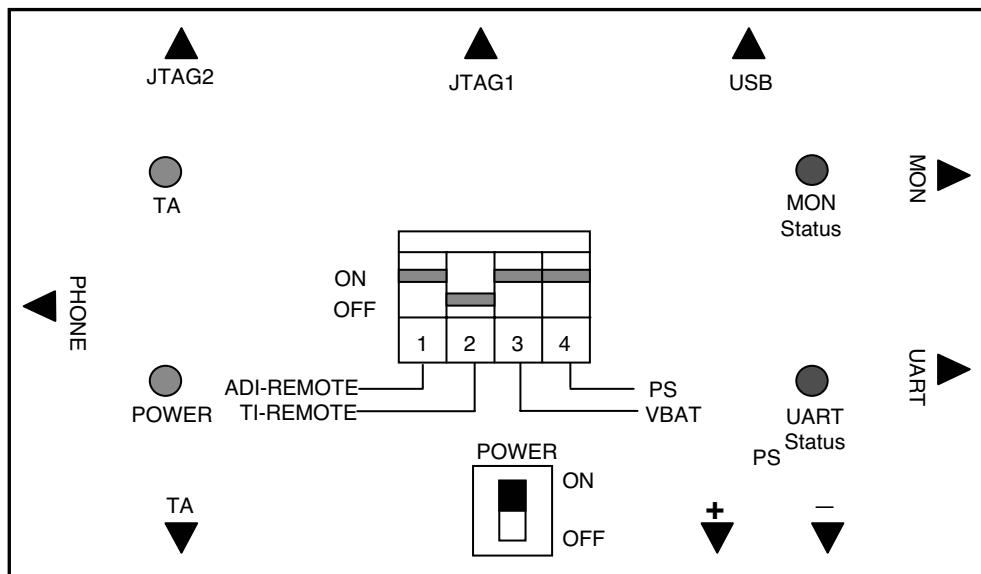


Figure 5-3 The top view of Test JIG

### C. Test Jig Operation

Table 5-2 Jig Power

Power Source	Description
Power Supply	Usually 4.0V
Travel Adaptor	Use TA, name is TA-20G(24pin)

Table 5-3 Jig DIP Switch

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

## 5. DOWNLOAD AND CALIBRATION

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**Table 5-4 LED Description**

LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

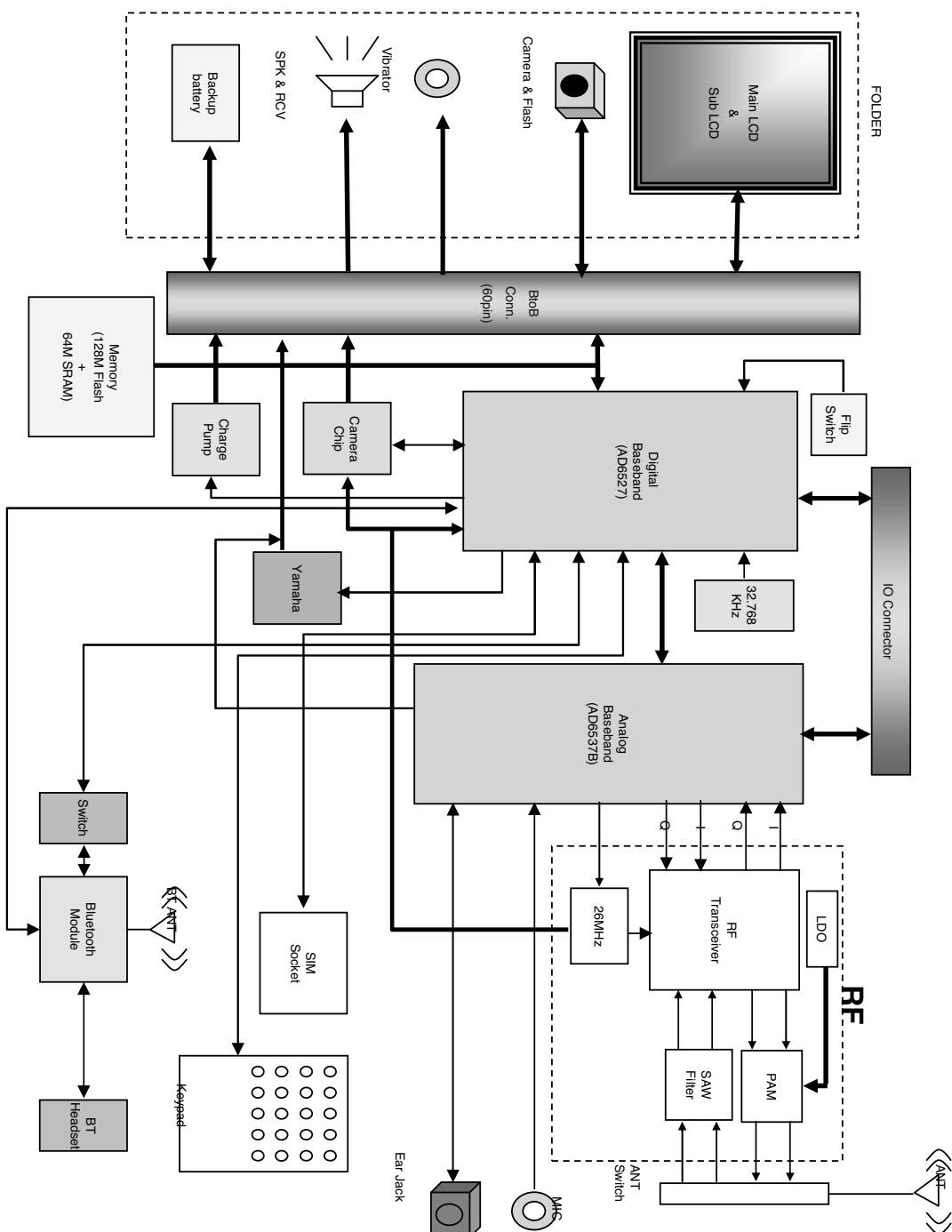
1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3<sup>rd</sup>, 4<sup>th</sup> of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1<sup>st</sup> ON state

### D. Procedure

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Power ON PC then enter into Windows 98(Remark : Windows 2000 system could be feasible)
3. Run AUTOCAL.exe, the AUTOCAL application window will be appeared.

## 6. BLOCK DIAGRAM

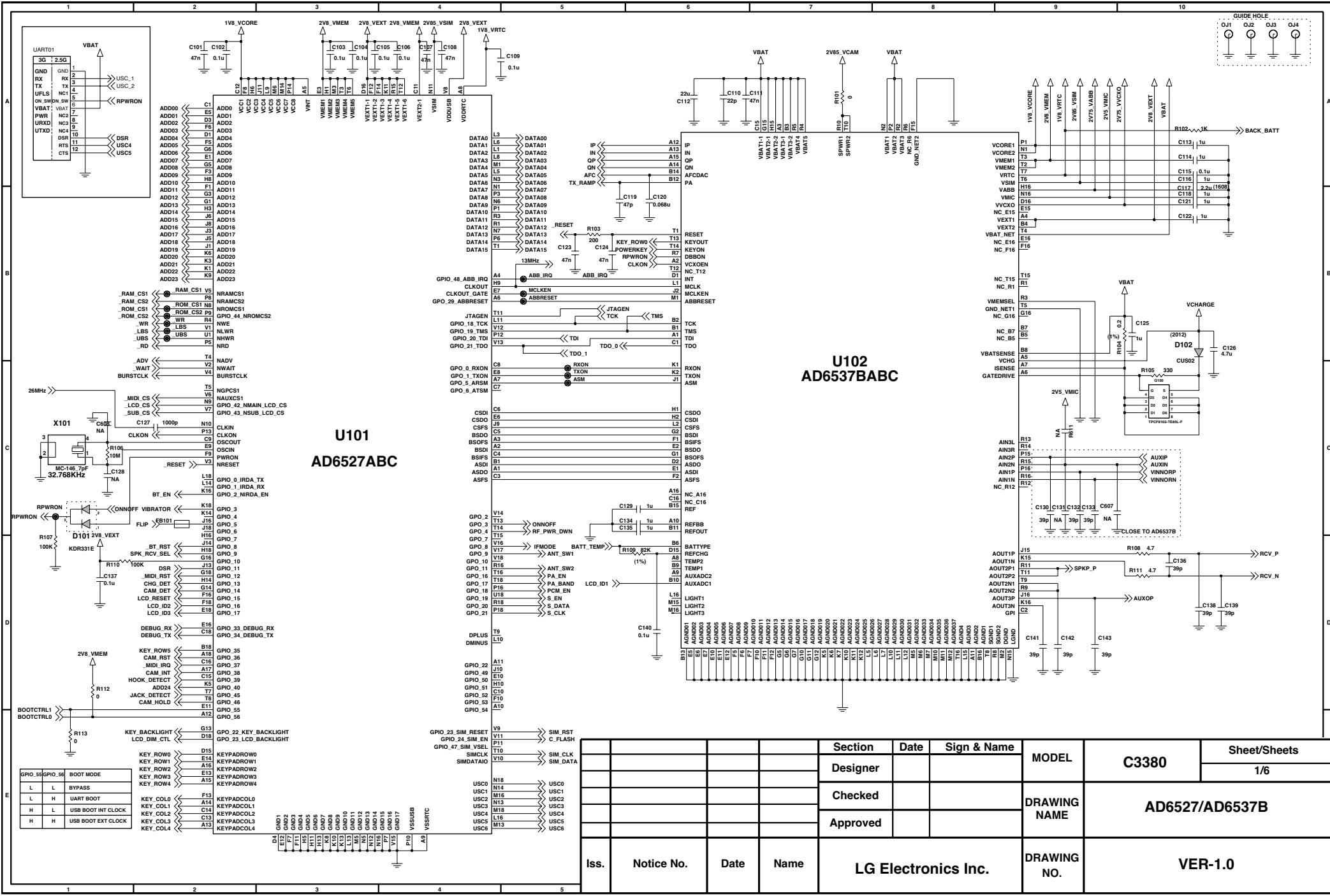
### 6. BLOCK DIAGRAM



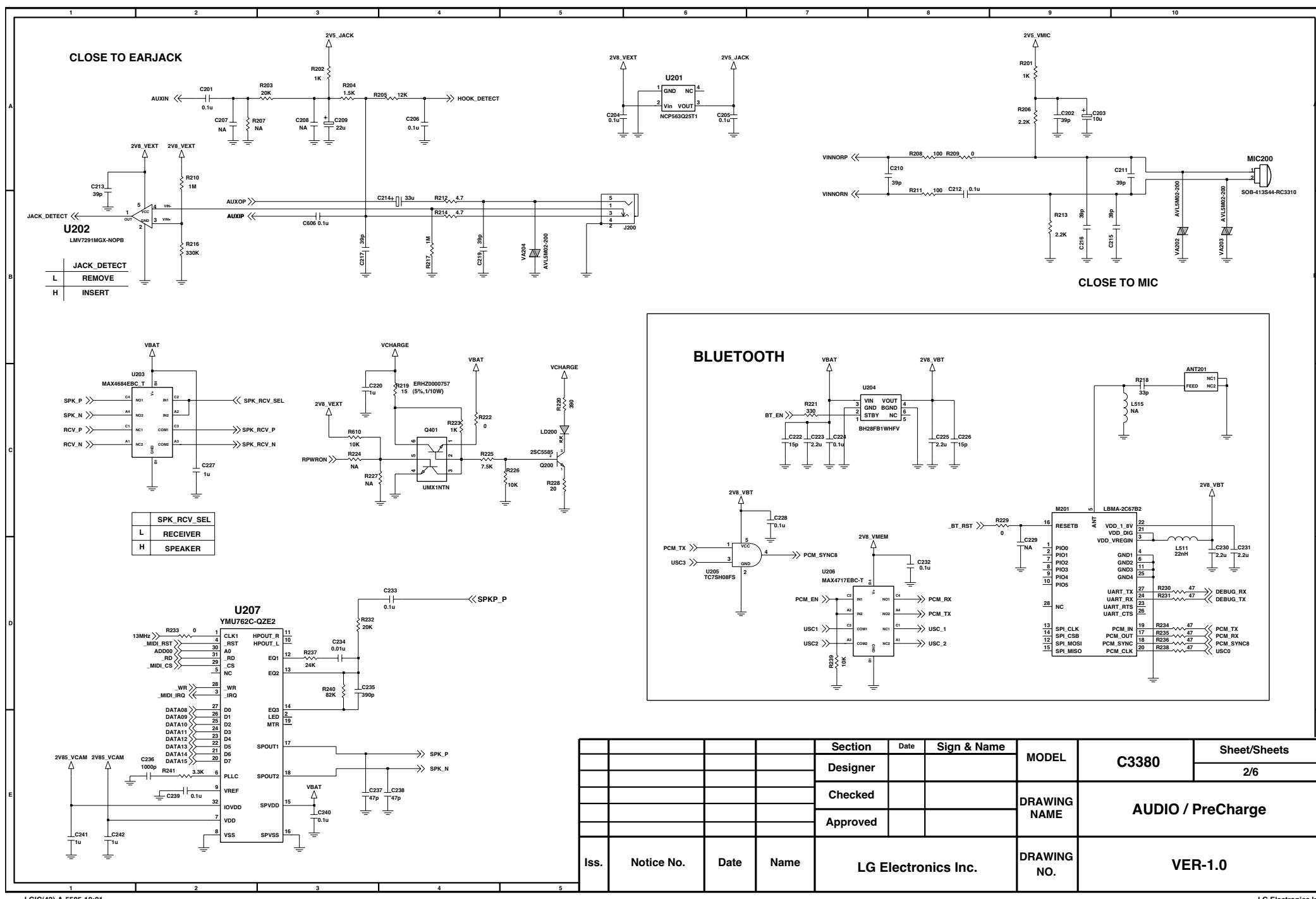
## **Note**

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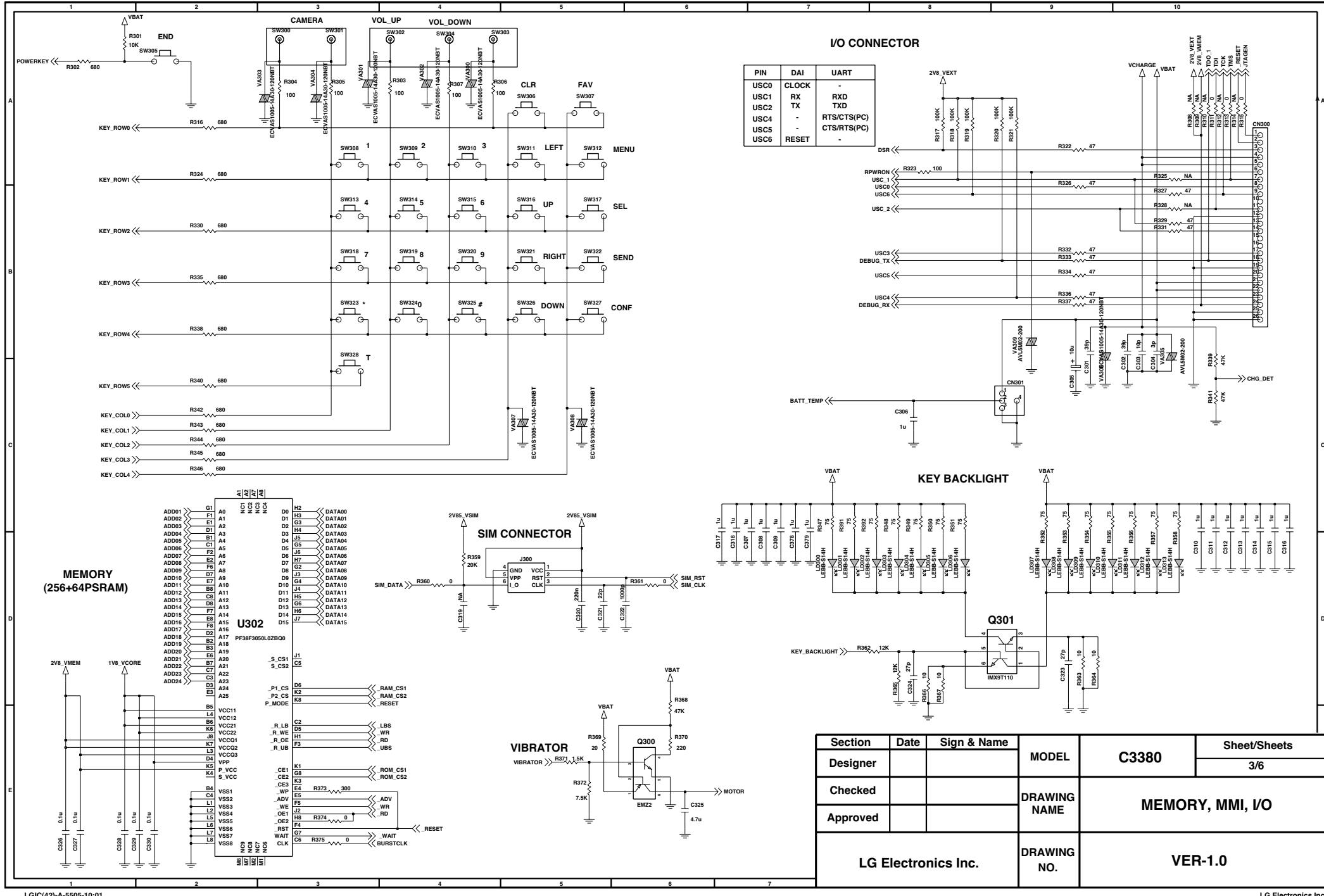
## **7. CIRCUIT DIAGRAM**



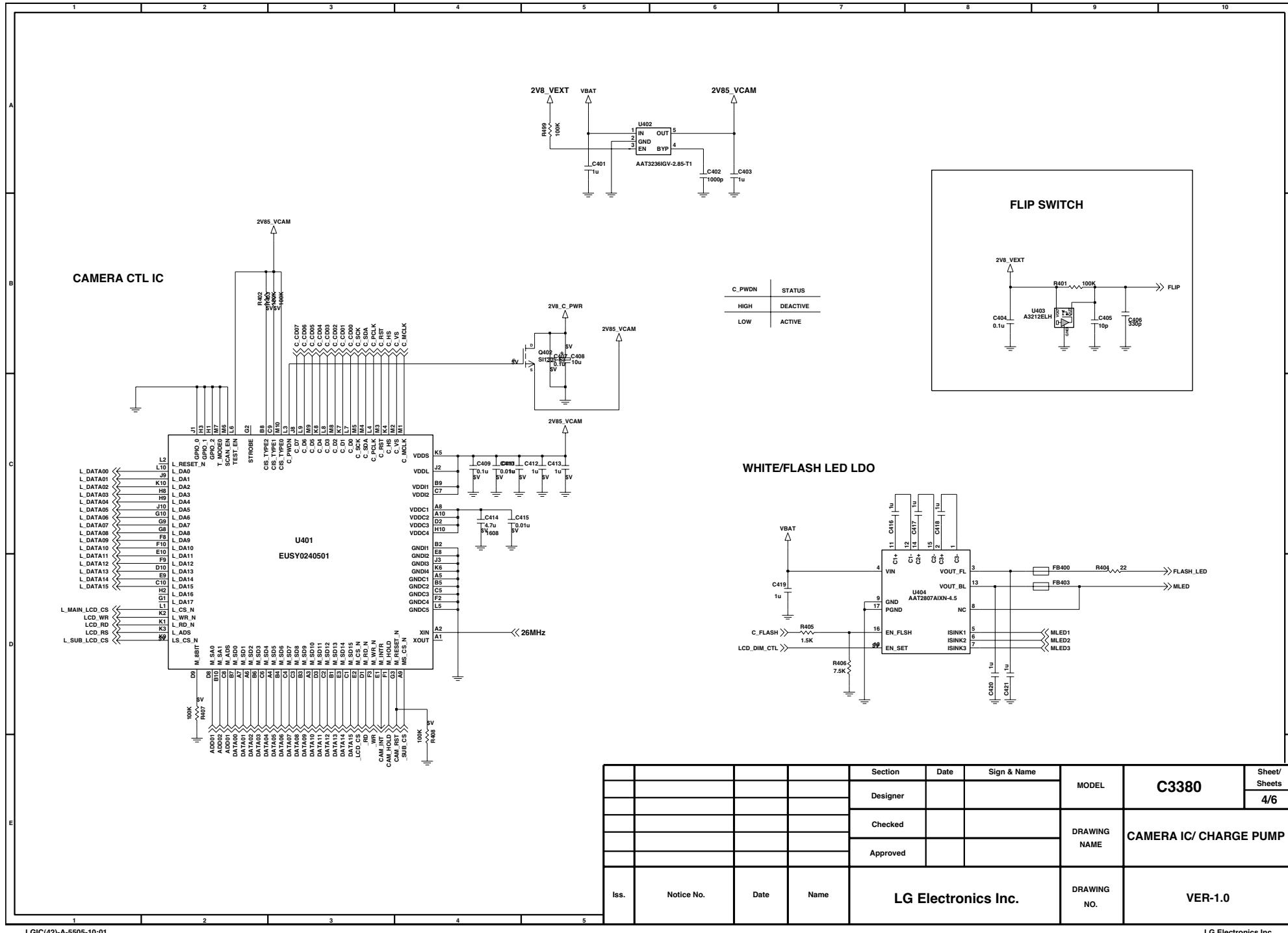
## 7. CIRCUIT DIAGRAM



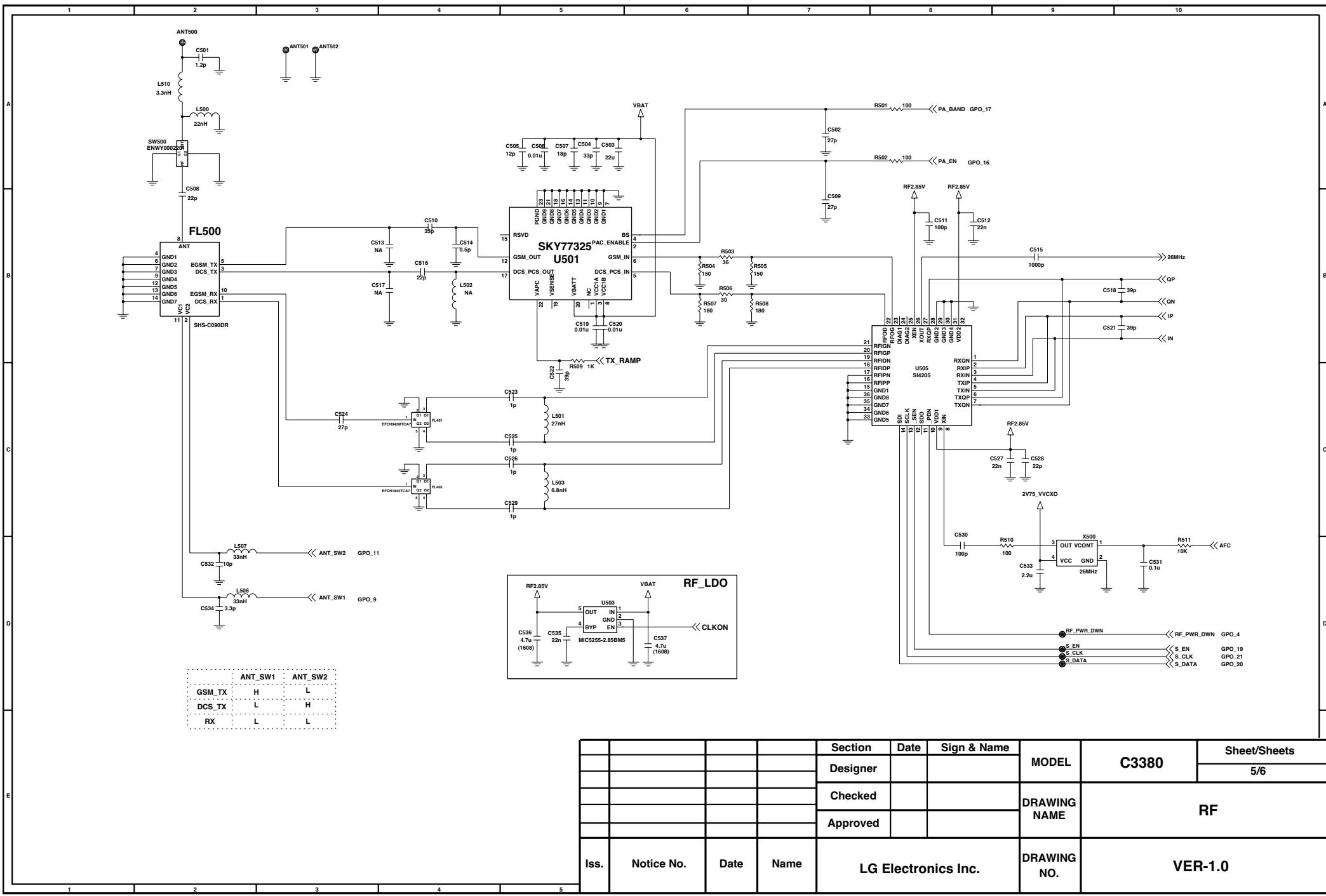
## 7. CIRCUIT DIAGRAM



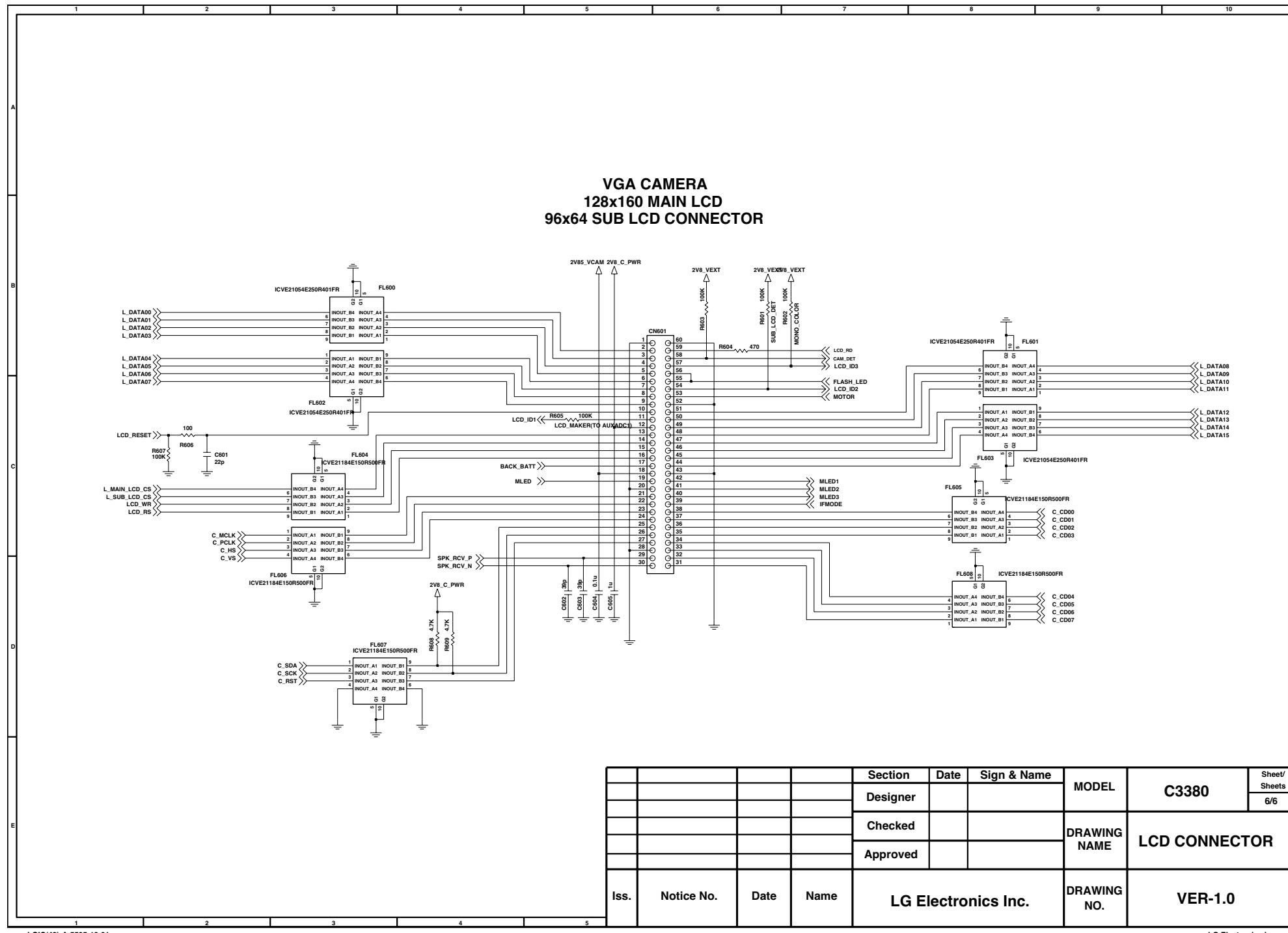
## 7. CIRCUIT DIAGRAM



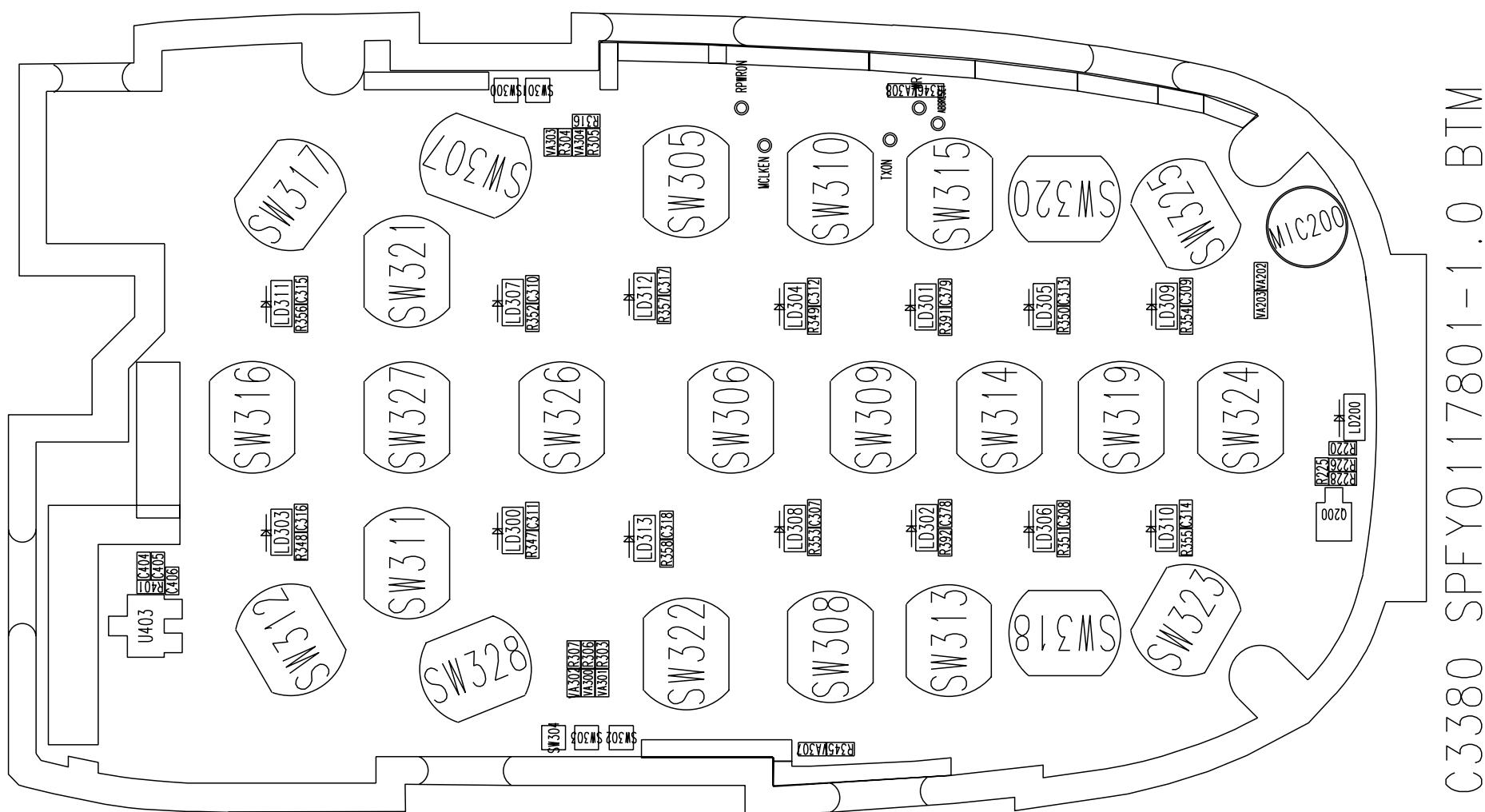
## 7. CIRCUIT DIAGRAM



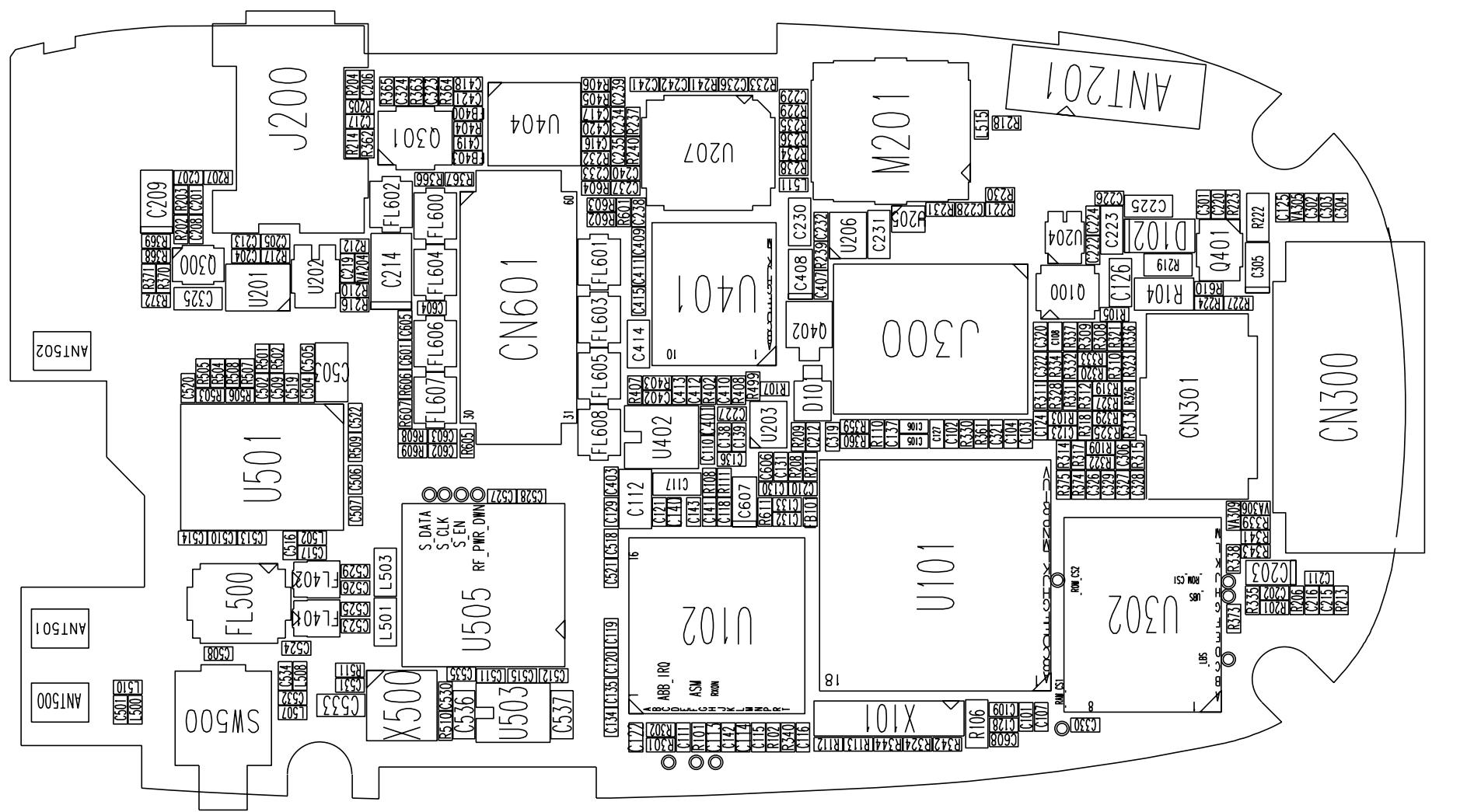
## 7. CIRCUIT DIAGRAM



## 8. PCB LAYOUT



## **8. PCB LAYOUT**



C3380 SPFY0117801-1.0 TOP

# 9. ENGINEERING MODE

## A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

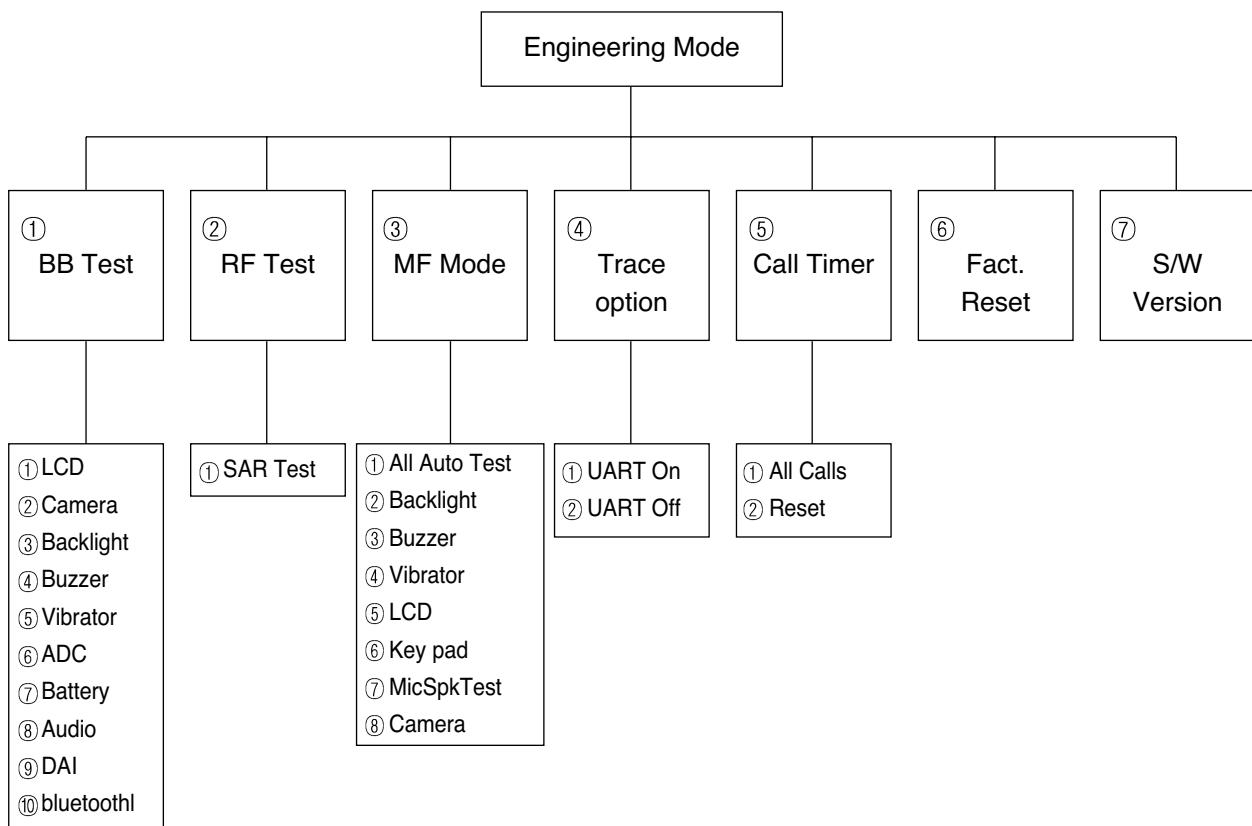
## B. Access Codes

The key sequence for switching the engineering mode on is 2945#\*#. Pressing END will switch back to non-engineering mode operation.

## C. Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

## D. Engineering Mode Menu Tree



## **9. ENGINEERING MODE**

---

### **9.1 BB Test [MENU 1]**

#### **9.1.1 Contrast Value**

This Menu is to select LCD bright. (80 ~ 120)

#### **9.1.2 Camera**

- 1) Main LCD preview** : This menu is to test Camera preview on Main LCD screen.
- 2) Sub LCD Preview** : This menu is to test Camera preview on Sub LCD screen.
- 3) Flash on** : This menu is to test Folder Flash light.
  - Select this menu if you want to turn on folder flash light.
- 3) Flash off** : This menu is to test Folder Flash light.
  - Select this menu if you want to turn off folder flash light.

#### **9.1.3 Backlight**

This menu is to test the LCD Backlight and Keypad Backlight.

- 1) Backlight on** : LCD Backlight and Keypad Backlight light on at the same time.
- 2) Backlight off** : LCD Backlight and Keypad Backlight light off at the same time.
- 3) Backlight value** : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

#### **9.1.4 Buzzer**

This menu is to test the melody sound.

- 1) Melody on** : Melody sound is played through the speaker.
- 2) Melody off** : Melody sound is off.

#### **9.1.5 Vibrator**

This menu is to test the vibration mode.

- 1) Vibrator on** : Vibration mode is on.
- 2) Vibrator off** : Vibration mode is off.

### 9.1.6 ADC (Analog to Digital Converter)

This displays the value of each ADC.

- 1) **MVBAT ADC** : Main Voltage Battery ADC
- 2) **AUX ADC** : Auxiliary ADC
- 3) **TEMPER ADC** : Temperature ADC

### 9.1.7 BATTERY

- 1) **Bat Cal** : This displays the value of Battery Calibration. The following menus are displayed in order :  
BATLEV\_4V, BATLEV\_3\_LIMIT, BATLEV\_2\_LIMIT, BATLEV\_1\_LIMIT, BAT\_IDLE\_LIMIT,  
BAT\_INCALL\_LIMIT, SHUT\_DOWN\_VOLTAGE, BAT\_RECHARGE\_LMT
- 2) **TEMP Cal** : This displays the value of Temperature Calibration. The following menus are displayed  
in order : TEMP\_HIGH\_LIMIT, TEMP\_HIGH\_RECHARGE\_LMT, TEMP\_LOW\_RECHARGE\_LMT,  
TEMP\_LOW\_LIMIT

### 9.1.8 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip.

Although the actual value can be written over, it returns to default value after switching off and on the phone.

- 1) VbControl1 : VbControl1 bit Register Value Setting
- 2) VbControl2 : VbControl2 bit Register Value Setting
- 3) VbControl3 : VbControl3 bit Register Value Setting
- 4) VbControl4 : VbControl4 bit Register Value Setting
- 5) VbControl5 : VbControl5 bit Register Value Setting
- 6) VbControl6 : VbControl6 bit Register Value Setting

### 9.1.9 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) DAI AUDIO : DAI audio mode
- 2) DAI UPLINK : Speech encoder test
- 3) DAI DOWNLINK : Speech decoder test
- 4) DAI OFF : DAI mode off

### 9.1.0 Bluetooth

This menu is to test the Bluetooth

- 1) ENTER TEST MODE : Audio, RF test
- 2) BYPASS MODE ON :
- 3) BYPASS MODE OFF :

## **9. ENGINEERING MODE**

---

### **9.2 RF Test [MENU 2]**

#### **9.2.1 SAR test**

This menu is to test the Specific Absorption Rate.

- 1) SAR test on : Phone continuously process TX only. Call-setup equipment is not required.
- 2) SAR test off : TX process off

### **9.3 MF mode [MENU 3]**

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

#### **9.3.1 All auto test**

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker,

#### **9.3.2 Backlight**

LCD Backlight is on for about 1.5 seconds at the same time, then off.

#### **9.3.3 Buzzer**

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

#### **9.3.4 Vibrator**

Vibrator is on for about 1.5 seconds.

#### **9.3.5 LCD**

##### **1) LCD**

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

##### **2) SubLCD**

Sub LCD screen resolution tests horizontally and vertically one by one and fills the screen.

#### **9.3.6 Key pad**

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

### 9.3.7 MicSpk Test

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically.

### 9.3.8 Camera

Camera preview function is activated on Main LCD screen.

## 9.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

## 9.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) All calls : This displays total conversation time. User cannot reset this value.
- 2) Reset settings : This resets total conversation time to this, [00:00:00].
- 3) DAI DOWNLINK : Speech decoder test
- 4) DAI OFF : DAI mode off

## 9.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

### Attention

- ① Fact. Reset (i.e.Factory Reset) should be only used during the Manufacturing process.
- ② Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

## 9.7 S/W version

This displays software version stored in the phone.

## **10. STAND ALONE TEST**

---

# **10. STAND ALONE TEST**

### **10.1 Introduction**

This manual explains how to examine the status of RX and TX of the model.

#### **A. Tx Test**

TX test - this is to see if the transmitter of the phones is activating normally.

#### **B. Rx Test**

RX test - this is to see if the receiver of the phones is activating normally.

### **10.2 Setting Method**

#### **A. COM port**

- a. Move your mouse on the “Connect” button, then click the right button of the mouse and select “Com setting”.
- b. In the “Dialog Menu”, select the values as explained below.
  - Port : select a correct COM port
  - Baud rate : 38400
  - Leave the rest as default values

#### **B. Tx**

##### **1. Selecting Channel**

- Select one of GSM or DCS Band and input appropriate channel.

##### **2. Selecting APC**

- a. Select either Power level or Scaling Factor.
- b. Power level
  - Input appropriate value GSM (between 5~19) or DCS (between 0~15)
- c. Scaling Factor
  - A ‘Ramp Factor’ appears on the screen.
  - You may adjust the shape of the Ramp or directly input the values.

#### **C. Rx**

##### **1. Selecting Channel**

- Select one of GSM or DCS Band and input appropriate channel.

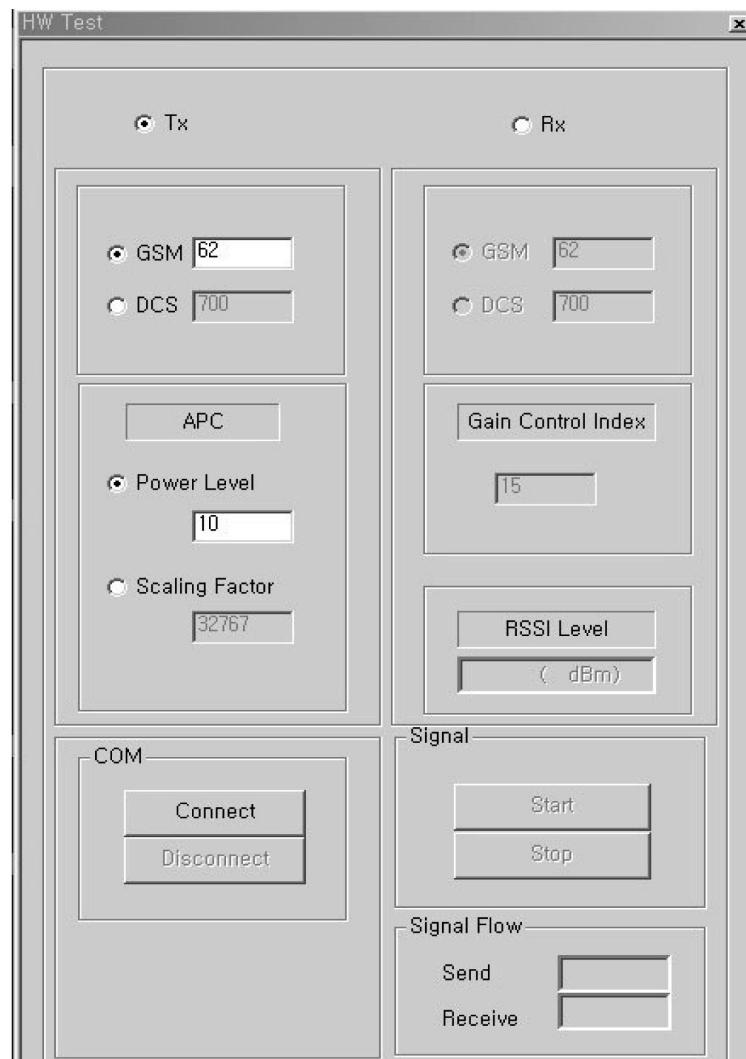
##### **2. Gain Control Index (0~ 26) and RSSI level**

- See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
- Normal phone should indicate the value of RSSI close to -16dBm.

### 10.3 Means of Test

- a. Select a COM port
- b. Set the values in Tx or Rx
- c. Select band and channel
- d. After setting them all above, press connect button.
- e. Press the start button

**Figure 10-1. HW test program**

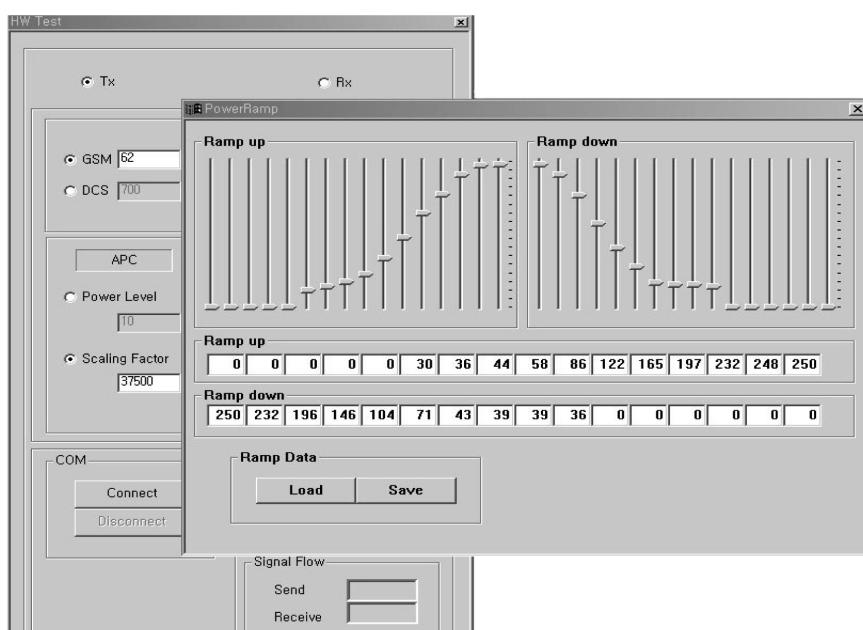


## 10. STAND ALONE TEST

**Figure 10-2. HW test setting**



**Figure 10-3. Ramping profile**



# 11. AUTO CALIBRATION

## 11.1 Overview

Autocal (Auto Calibration) is the PC side Calibration tool that perform Tx ,Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply). Autocal generate calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

## 11.2 Requirements

- PC or Notebook installed with Microsoft Windows 98/ME/2000/XP
- Auto Calibration program(Autocal.exe)
- GSM Phone
- LGE PIF JIG, Serial Cable, Data Cable
- Agilent 8960(Call Setting Instrument)
- Tektronix PS2521G(Programmable Power Supply)

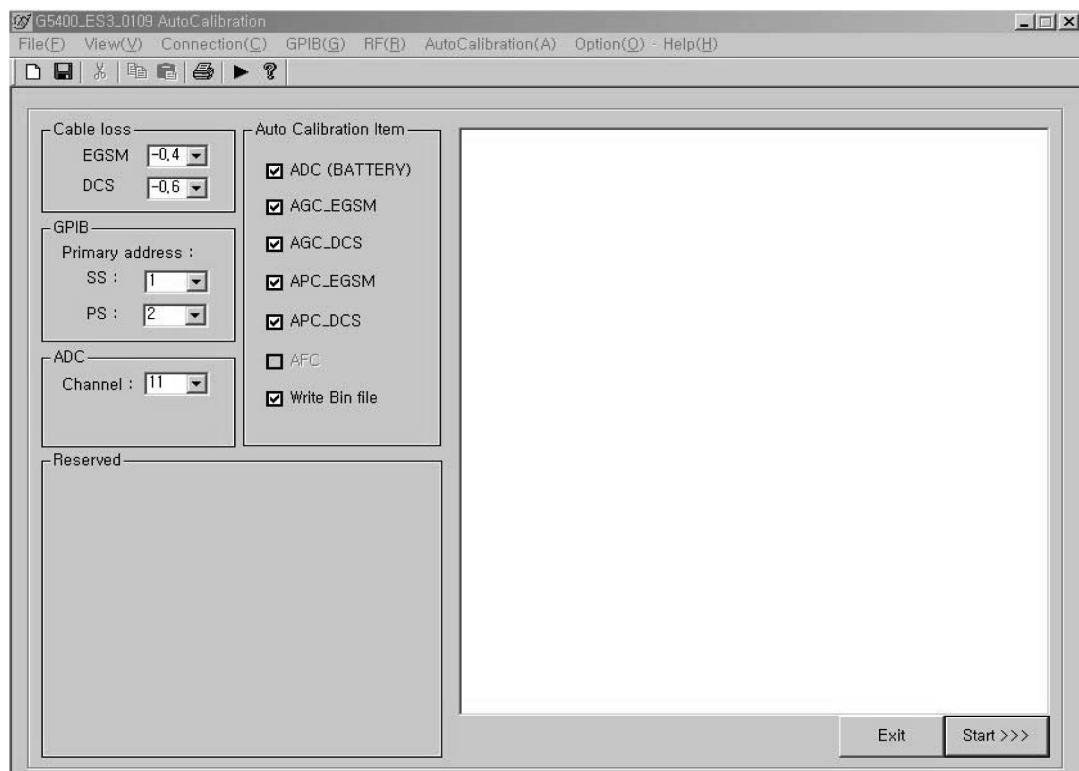
## 11.3 Menu and Settings

- File(F) Clear View : Clear Calibration Status window texts
- File(F) Save View : Save Calibration Status window texts
- File(F) Save Setting : Save Current Calibration settings to setting file(\*.cal)
- File(F) Load Setting : Load saved Calibration setting
- File(F) Make BIN ALL : Make binary file after calibration finished
- File(F) Make BIN BAT.Cal only : Make binary file of battery cal data only after calibration finished
- File(F) Make & Write BIN : Make binary file after calibration finished then download it to the Flash Memory
- View(V) Tools : Enable or disable Tool bar
- View(V) Status : Enable or disable status bar
- Connection(C) Connect : Connect the phone with PC. This procedure checks whether the PC is connected “ag8960” or not. After that it performs sync. procedure with phone. If the sync. procedure is successful state column on status bar changed to SETUP, else you should disconnect phone and try again from the beginning and also check the whole connection. All measurement is performed at state SETUP.
- Connection(C) Port Setting : Show COM port setting dialog and Baudrate you can change,etc.
- GPIB(G) Connect : Connect the Ag8960 GPIB card with PC.

## 11. AUTO CALIBRATION

---

**Figure 11-1. Auto Calibration Program**



Screen → Cable loss : Enter the RF cable loss GSM and DCS

Screen → GPIB(Primary address) : Enter the SS(Ag8960) and PS(Tektronix PS2521G) GPIB address

Screen → ADC Channel : Default ADC Calibration Channel

Screen → Auto Calibration Item : Default Calibration Settings about Tx, Rx, ADC and write BIN file

### 11.4 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

### 11.5 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

### 11.6 ADC

This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table

### 11.7 Setting

check com port and cable loss. Select automatic calibration item. If you uncheck one item calibration will stop from the unchecked item. This is useful when you want to process only one item.

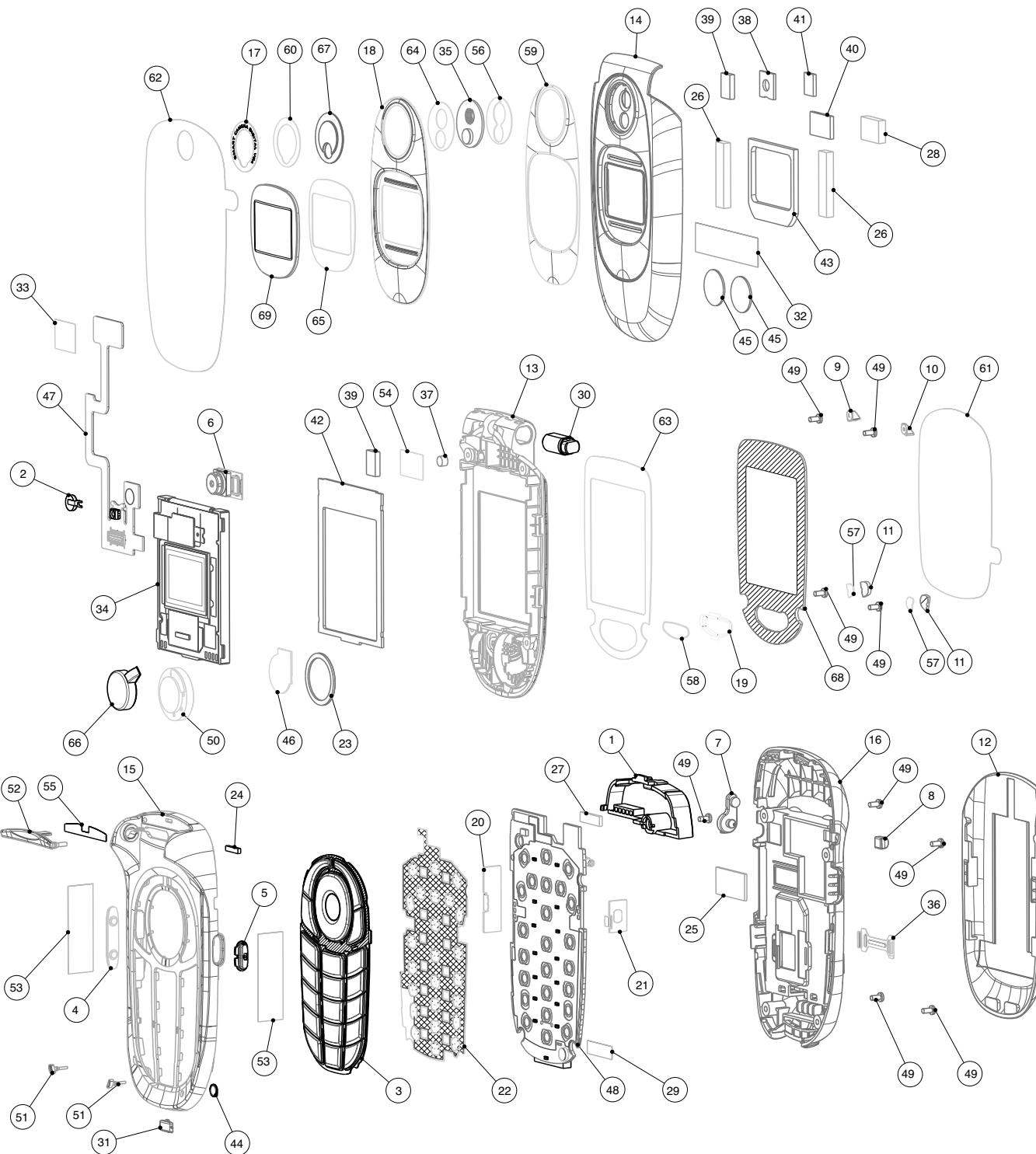
### 11.8 How to do calibration

- A. Connect cable between phone and serial port of PC.
- B. Connect Ag8960 equipment and Power Supply and phone.
- C. Set correct port and baud rate.
- D. Press Start button. AutoCal process all calibration procedure
  - i. AGC EGSM
  - ii. AGC DCS
  - iii. APC EGSM
  - iv. APC DCS
  - v. ADC
- E. After finished all measurement. The state is return to SETUP.
- F. The Cal file will be generated and then the calibration data will be written into phone and then will be reset.



## **12. EXPLODED VIEW & REPLACEMENT PART LIST**

## 12.1 EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
69	WINDOW,LCD(SUB)	1	MWAF0029601	
68	WINDOW,LCD	1	MWAC0058501	
67	WINDOW,CAMERA	1	MWAE0011501	
66	VIBRATOR,MOTOR	1	SJMY0002602	
65	TAPE,WINDOW(SUB)	1	MTAE0024401	
64	TAPE,WINDOW	1	MTAD0042001	
63	TAPE,WINDOW	1	MTAD0041901	
62	TAPE,PROTECTION	1	MTAB0059701	
61	TAPE,PROTECTION	1	MTAB0094801	
60	TAPE,DECO	1	MTAA0098601	
59	TAPE,DECO	1	MTAA0097801	
58	TAPE,DECO	1	MTAA0097701	
57	TAPE	2	MTAZ0091901	
56	TAPE	1	MTAZ0087801	
55	TAPE	1	MTAZ0059801	
54	TAPE	1	MTAZ0043901	
53	TAPE	2	MTAZ0036001	
52	STOPPER,HINGE	1	MSGB00081##	03
51	STOPPER	2	MSGY00085##	02
50	SPEAKER	1	SUSY0014101	
49	SCREW MACHINE	9	GMZZ0015101	
48	PCB ASSY,MAIN,SMT	1	SAFF0068902	
47	PCB ASSY,FLEXIBLE	1	SACY0025802	
46	PAD,MOTOR	1	MPBJ0027301	
45	PAD,MOTOR	2	MPBJ0019001	
44	PAD,MIKE	1	MPBH0014601	
43	PAD,LCD(SUB)	1	MPBQ0024901	
42	PAD,LCD	1	MPBG0027002	
41	PAD,FLEXIBLE PCB	1	MPBF0013101	
40	PAD,FLEXIBLE PCB	1	MPBF0012001	
39	PAD,FLEXIBLE PCB	2	MPBF0008301	
38	PAD,CAMERA	1	MPBT0021901	
37	MAGNET,SWITCH	1	MMMA0001601	
36	LOCKER	1	MLEY0000801	
35	LENS,FLASH	1	MLCE0005201	
34	LCD MODULE	1	SVLM0012501	
33	INSULATOR	1	MIDZ0051201	
32	INSULATOR	1	MIDZ0049601	
31	INDICATOR,LED	1	MIAA00013301	
30	HINGE,FOLDER	1	MHFD0003701	
29	GASKET,SHIELD FORM	1	MGAD0099201	
28	GASKET,SHIELD FORM	1	MGAD0096001	
27	GASKET,SHIELD FORM	1	MGAD0077701	
26	GASKET,SHIELD FORM	2	MGAD0069101	
25	GASKET,SHIELD FORM	1	MGAD0065501	
24	GASKET,EMI	1	MGAB0008501	
23	FILTER,SPEAKER	1	MFBC0018801	
22	DOME ASSY,METAL	1	ADCA0040801	
21	DOME ASSY,METAL	1	ADCA0029501	
20	DOME ASSY,METAL	1	ADCA0029401	
19	DEC0,RECEIVER	1	MDAH0014801	
18	DEC0,FOLDER(UPPER)	1	MDAE0032701	
17	DEC0,CAMERA	1	MDAD0017101	
16	COVER,REAR	1	MCJN00404##	01
15	COVER,FRONT	1	MCJK00484##	01
14	COVER,FOLDER(UPPER)	1	MCJJ00376##	01
13	COVER,FOLDER(LOWER)	1	MCJH00305##	01
12	COVER,BATTERY	1	MCJA0027301	
11	CAP,SCREW	2	MCCCH0068901	
10	CAP,SCREW	1	MCCCH00367##	03
9	CAP,SCREW	1	MCCCH00365##	03
8	CAP,MOBILE SWITCH	1	MCCF0019901	
7	CAP,EARPHONE JACK	1	MCCC00193##	03
6	CAMERA	1	SVCY0004001	
5	BUTTON,SIDE	1	MBJL0015501	
4	BUTTON,SIDE	1	MBJL0015401	
3	BUTTON ASSY,DIAL	1	ABGA0005701	
2	BATTERY,CELL,LITHIUM	1	SBCL0001303	
1	ANTENNA,GSM,FIXED	1	SNGF0006301	



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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### 12.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
1		GSM(FOLDER)	TGFF0078720	C3380 SWEBK	Black	
2	AAAY00	ADDITION	AAAY0139801	C3380 SWEBK	Black	
3	MCJA00	COVER,BATTERY	MCJA0027301	C3380, COVER BATTERY, BLACK(Glossy)	Black	12
2	APEY00	PHONE	APEY0266701	C3380 SWEBK, PHONE ASSEMBLY	Black	
3	ABGA00	BUTTON ASSY,DIAL	ABGA0005703	C3380 OPEN, KEYPAD, English, BLACK	Black	3
3	ACGG00	COVER ASSY,FOLDER	ACGG0064401	C3380, ASSY FOLDER	Black	
4	ACAZ00	CAP ASSY	ACAZ0004601	C3380, CAP ASSY, BLACK	Black	
5	MCCH00	CAP,SCREW	MCCH0068901	C3380, CAP SCREW, BLACK	Black	11
5	MTAZ00	TAPE	MTAZ0091901	C3380, TAPE, CAP ASSY	Black	57
4	ACGH00	COVER ASSY, FOLDER(LOWER)	ACGH0037701	C3380, ASSY FOLDER LOWER, BLACK	Black	
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0030501	C3380, FOLDER LOWER, BLACK	Black	13
5	MDAH00	DECO,RECEIVER	MDAH0014801	C3380, DECO RECEIVER	Silver	19
5	MFBC00	FILTER,SPEAKER	MFBC0018801	C3380, FILTER,SPEAKER	Black	23
5	MMAA00	MAGNET,SWITCH	MMAA0001601	7100 magnetic	Silver	37
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0008301	C3300, PAD FPCB Noise	Black	39
5	MPBG00	PAD,LCD	MPBG0027002	C3380, PAD LCD(MAIN)	Black	42
5	MPBJ00	PAD,MOTOR	MPBJ0027301	C3380. PAD, MOTOR	Black	46
5	MTAA00	TAPE,DECO	MTAA0097701	C3380, TAPE, DECO RECEIVER	Black	58
5	MTAD00	TAPE,WINDOW	MTAD0041901	C3380, TAPE, WINDOW(MAIN)	Black	
5	MTAZ00	TAPE	MTAZ0043901	GE200 TAPE,CAMERA(LOWER)	White	54
4	ACGJ00	COVER ASSY, FOLDER(UPPER)	ACGJ0049401	C3380, ASSY FOLDER UPPER, BLACK	Black	
5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0037601	C3380, FOLDER UPPER, BLACK	Black	14
5	MDAE00	DECO,FOLDER(UPPER)	MDAE0032701	C3380, DECO UPPER, BLACK	Black	18
5	MGAD00	GASKET,SHIELD FORM	MGAD0069101	C3300, GASKET LCD	Gold	26
5	MGAD01	GASKET,SHIELD FORM	MGAD0096001	C3380, GASKET, LCD SOLDERING	Gold	28
5	MIDZ00	INSULATOR	MIDZ0049601	C3300, INSULATOR TAPE	Silver	32
5	MLCE00	LENS,FLASH	MLCE0005201	C3380, LENS FLASH	Transparent	35
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0008301	C3300, PAD FPCB Noise	Black	
5	MPBF01	PAD,FLEXIBLE PCB	MPBF0012001	C3300, PAD LCD Connector	Black	40
5	MPBF02	PAD,FLEXIBLE PCB	MPBF0013101	C3380, PAD Camera Connector	Black	41

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
5	MPBJ00	PAD,MOTOR	MPBJ0019001	C3300, PAD MOTOR	Black	45
5	MPBQ00	PAD,LCD(SUB)	MPBQ0024901	C3380, PAD LCD(SUB)	Black	43
5	MPBT00	PAD,CAMERA	MPBT0021901	C3380, PAD CAMERA	Black	38
5	MTAA00	TAPE,DECO	MTAA0097801	C3380, TAPE, UPPER DECO	Transparent	59
5	MTAB00	TAPE,PROTECTION	MTAB0094701	C3380, TAPE, PROTECION, DECO	Transparent	
5	MTAD00	TAPE,WINDOW	MTAD0042001	C3380, TAPE, WINDOW CAMERA	Black	64
5	MTAE00	TAPE,WINDOW(SUB)	MTAE0024401	C3380, TAPE, WINDOW(SUB)	Black	65
5	MTAZ00	TAPE	MTAZ0087801	C3380, TAPE, LENS FLASH	Black	56
4	ACGK00	COVER ASSY,FRONT	ACGK0059101	C3380, ASSY MAIN FRONT, BLACK	Black	
5	MBJL00	BUTTON,SIDE	MBJL0015401	C3300, BUTTON SIDE(VOLUME)	Silver	4
5	MBJL01	BUTTON,SIDE	MBJL0015501	C3300, BUTTON SIDE(CAMERA)	Silver	5
5	MCJK00	COVER,FRONT	MCJK0048401	C3380, COVER FRONT, BLACK	Black	15
5	MGAB00	GASKET,EMI	MGAB0008501	C3300, GASKET DOME SWITCH	Gold	24
5	MIAA00	INDICATOR,LED	MIAA0013301	C3300, INDECATOR	Milk	31
5	MPBH00	PAD,MIKE	MPBH0014601	C3300, C3400, PAD MIKE	Black	44
5	MSGB00	STOPPER,HINGE	MSGB0008103	C3400, BUMPER(HINGE), Black	Black	52
5	MSGY00	STOPPER	MSGY0008502	C3400, BUMPER(FOLDER), Black	Black	51
5	MTAZ00	TAPE	MTAZ0036001	C1300 CGRSV 27 X 9 X 0.05t	Blue	53
5	MTAZ01	TAPE	MTAZ0059801	C3300, TAPE BUMPER	Transparent	55
4	AWAZ00	WINDOW ASSY	AWAZ0007601	C3380, CAMERA WINDOW ASSY, BLACK	Black	
5	ADBY00	DECO ASSY	ADBY0007901	C3380, DECO CAMERA ASSY, BLACK	Black	
6	MDAD00	DECO,CAMERA	MDAD0017101	C3380, DECO CAMERA, BLACK	Black	17
6	MTAA00	TAPE,DECO	MTAA0098601	C3380, TAPE, CAMERA DECO	Transparent	60
5	MWAE00	WINDOW,CAMERA	MWAE0011501	C3380, LENS CAMERA	Transparent	67
4	GMZZ00	SCREW MACHINE	GMZZ0015101	1.4 mm,3.0 mm,MSWR3(FN) ,N ,+ ,-,	Silver	49
4	MCCH00	CAP,SCREW	MCCH0036503	C3400, CAP SCREW(L), Black	Black	9
4	MCCH01	CAP,SCREW	MCCH0036703	C3400, CAP SCREW(R), Black	Black	10
4	MHFD00	HINGE,FOLDER	MHFD0003701	PI5.8 5Kgf CAN TYPE/ KATO SPRING(HEAD R1.0)	Without Color	30
4	MIDZ00	INSULATOR	MIDZ0051201		Blue Green	33
4	MLAC00	LABEL,BARCODE	MLAC0003401	EZ LOOKS(user for mechanical)	Without Color	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0014401	C3380, PAD FPCB, ON/OFF NOISE	Black	

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
4	MTAB00	TAPE,PROTECTION	MTAB0059701	GE200 TAPE,PROTECTION (FOLDER)	Without Color	62
4	MTAB01	TAPE,PROTECTION	MTAB0094801	C3380, TAPE, PROTECTION, MAIN WINDOW	Transparent	61
4	MTAZ00	TAPE	MTAZ0096901	C3380, TAPE, RAIN PROOF	Black	
4	MWAC00	WINDOW,LCD	MWAC0058501	C3380, WINDOW(MAIN), BLACK	Black	68
4	MWAF00	WINDOW,LCD(SUB)	MWAF0029601	C3380, WINDOW(SUB)	Silver	69
4	SVLM00	LCD MODULE	SVLM0012501	MAIN ,128*160+96*64(MSTN) ,35.8*47*5.1(t) ,65k ,CSTN ,TM ,M:HD66766UR,S:S-44001A ,SUB Color film		34
3	ACGM00	COVER ASSY,REAR	ACGM0060101	C3380, ASSY MAIN REAR, BLACK	Black	
4	MCCC00	CAP,EARPHONE JACK	MCCC0019303	C3380, CAP EARPHONE JACK, Black	Black	7
4	MCJN00	COVER,REAR	MCJN0040401	C3380, REAR	Black	16
4	MGAD00	GASKET,SHIELD FORM	MGAD0065501	GE200(REAR)	Gold	25
4	MLEY00	LOCKER	MLEY0000801	SIM LOCKER	Silver	36
3	GMZZ00	SCREW MACHINE	GMZZ0015101	1.4 mm,3.0 mm,MSWR3(FN) ,N ,+ .- ,	Silver	
3	MCCF00	CAP,MOBILE SWITCH	MCCF0019903	C3380, CAP MOBILE SWITCH, Black	Black	8
3	MLAK00	LABEL,MODEL	MLAK0006301	LG (30.5x21.5 4-1R)	Pearl White	
5	ADCA00	DOME ASSY,METAL	ADCA0029401	GE200 DOME ASSY, VOLUME	Silver	20
5	ADCA01	DOME ASSY,METAL	ADCA0029501	GE200 DOME ASSY, FUNCTION(CAMERA)	Silver	21
5	ADCA02	DOME ASSY,METAL	ADCA0040801	C3380, DOME ASSY,METAL	White	22
5	MGAD00	GASKET,SHIELD FORM	MGAD0077701	GE200 SHIELD,FOAM(INTENNA)	Gold	27
5	MGAD01	GASKET,SHIELD FORM	MGAD0099201	C3380, GASKET SHIELD FORM, I/O Connector	Gold	29
5	MIDZ00	INSULATOR	MIDZ0057301		Black	
5	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER	Without Color	
5	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))	Without Color	

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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### <Main component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SACY00	PCB ASSY,FLEXIBLE	SACY0025802			47
5	SACB00	PCB ASSY, FLEXIBLE,INSERT	SACB0018701			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0023802			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0011801			
7	ENBY00	CONNECTOR,BOARD TO BOARD	ENBY0013007	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 1.5 / HEADER FOR LCM FPCB		
7	ENBY01	CONNECTOR,BOARD TO BOARD	ENBY0019501	20 PIN,.4 mm,ETC , ,H=1.5, Socket		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0017701			
7	EDLM00	DIODE,LED,MODULE	EDLM0005501	R,G,B ,3 LED,3.5*2.8*1.8 ,R/TP ,Flash LED		
7	ENBY00	CONNECTOR,BOARD TO BOARD	ENBY0014501	40 PIN,0.4 mm,ETC , ,		
6	SPCY00	PCB,FLEXIBLE	SPCY0043801	POLYI ,0.5 mm,MULTI-4 ,C3400 FPCB		
4	SBCL00	BATTERY,CELL,LITHIUM	SBCL0001303	2 V,1 mAh,COIN ,SOLDER TYPE BACKUP BATTERY		2
4	SJMY00	VIBRATOR,MOTOR	SJMY0002602	3.0 V,80 mA,12*3.4 ,		66
4	SUSY00	SPEAKER	SUSY0014101	ASSY ,8 ohm,92 dB,16 mm,4.0T, 0.7W		50
4	SVCY00	CAMERA	SVCY0004001			6
3	SAFY00	PCB ASSY,MAIN	SAFY0144603			
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0039506			
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0068903			48
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0060602			
6	C307	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C317	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C378	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C379	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	LD200	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		
6	LD300	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD301	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD302	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD303	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD304	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD305	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD306	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD307	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD308	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD309	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD310	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD311	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD312	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	LD313	DIODE,LED,CHIP	EDLH0006001	Blue ,1608 ,R/TP ,Blue SMD LED		
6	MIC200	MICROPHONE	SUMY0009201	FPCB ,44 dB,4.0*1.3 ,SMD TYPE		
6	Q200	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	R220	RES,CHIP	ERHY0000231	390 ohm,1/16W,J,1005,R/TP		
6	R225	RES,CHIP	ERHY0000258	7.5K ohm,1/16W,J,1005,R/TP		
6	R226	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R228	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R303	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R304	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R305	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R306	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R307	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R316	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R345	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R346	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R347	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R348	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R349	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R350	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R351	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R352	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R353	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R354	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R355	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R356	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R357	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R358	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R391	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R392	RES,CHIP	ERHY0000217	75 ohm,1/16W,J,1005,R/TP		
6	R401	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	U403	IC	EUSY0129501	SC-74A ,3 PIN,R/TP ,HALL-EFFECT SWITCH, Pb Free		
6	VA202	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR, Pb Free		
6	VA203	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR, Pb Free		
6	VA300	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA301	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA302	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA303	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA304	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA307	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0059102			
6	ANT201	ANTENNA,GSM,FIXED	SNGF0007901	2.5 ,-2.76 dBd, ,B/T Chip, Pb Free, SMD		
6	C101	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C106	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000165	68 nF,6.3V,K,X5R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C142	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C143	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C203	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C209	CAP,TANTAL,CHIP,MAKER	ECTZ0003602	22 uF,6.3V ,M ,STD ,2012 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C214	CAP,TANTAL,CHIP,MAKER	ECTZ0003101	33 uF,10V ,M ,STD ,ETC ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C233	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
6	C236	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C237	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C238	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C239	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C240	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C241	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C242	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C305	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0004902	220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C327	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C408	CAP,TANTAL,CHIP,MAKER	ECTZ0005201	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C415	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C416	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C501	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C503	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C504	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000111	12 pF,50V,J,NP0,TC,1005,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C507	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C510	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C511	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
6	C512	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C518	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C527	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0000102	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C531	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0000171	3.3 pF,16V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C601	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	CN300	CONNECTOR,I/O	ENRY0000801	24 PIN,0.5 mm,ETC ,Au ,BAT ZERO		
6	CN301	CONNECTOR,ETC	ENZY0016201	3 PIN,3.0 mm,ETC , ,H=7.5		
6	CN601	CONNECTOR,BOARD TO BOARD	ENBY0013008	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 1.5 / SOCKET FOR LCM FPCB		
6	D101	DIODE,SWITCHING	EDSY0016001	ESM ,15 V,100 mA,R/TP ,PB-FREE		
6	D102	DIODE,SWITCHING	EDSY0012101	US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t)		
6	FB101	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB400	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB403	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL401	FILTER,SAW	SFSY0021301	942.5 MHz,2.0*1.4*0.68 ,SMD ,		
6	FL402	FILTER,SAW	SFSY0021302	1842.5 MHz,2.0*1.4*0.68 ,SMD ,		
6	FL500	FILTER,SEPERATOR	SFAY0003702	900 ,1800 ,1.3 dB,1.5 dB,30 dB,25 dB,4532 ,Antenna switch		
6	FL600	FILTER,EMI/POWER	SFEY0007102	SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF)		
6	FL601	FILTER,EMI/POWER	SFEY0007102	SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF)		
6	FL602	FILTER,EMI/POWER	SFEY0007102	SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF)		
6	FL603	FILTER,EMI/POWER	SFEY0007102	SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF)		
6	FL604	FILTER,EMI/POWER	SFEY0007103	SMD ,18 V, ,SMD ,4ch. R-Varistor Array(50Ohm,15pF), Pb-free		
6	FL605	FILTER,EMI/POWER	SFEY0007103	SMD ,18 V, ,SMD ,4ch. R-Varistor Array(50Ohm,15pF), Pb-free		
6	FL606	FILTER,EMI/POWER	SFEY0007103	SMD ,18 V, ,SMD ,4ch. R-Varistor Array(50Ohm,15pF), Pb-free		
6	FL607	FILTER,EMI/POWER	SFEY0007103	SMD ,18 V, ,SMD ,4ch. R-Varistor Array(50Ohm,15pF), Pb-free		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	FL608	FILTER,EMI/POWER	SFEY0007103	SMD ,18 V, ,SMD ,4ch. R-Varistor Array(50Ohm,15pF), Pb-free		
6	J200	CONN,JACK/PLUG, EARPHONE	ENJE0002301	3,5 PIN,G7000 EAR JACK 3 pole, 5 pin KSD		
6	J300	CONN,SOCKET	ENSY0001608	6 PIN,ETC ,5D ,2.54 mm,1.8T		
6	L500	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	L501	INDUCTOR,CHIP	ELCH0002715	27 nH,G ,1608 ,R/TP ,coil inductor		
6	L503	INDUCTOR,CHIP	ELCH0002717	6.8 nH,J ,1608 ,R/TP ,coil inductor		
6	L507	INDUCTOR,CHIP	ELCH0005006	33 nH,J ,1005 ,R/TP ,		
6	L508	INDUCTOR,CHIP	ELCH0005006	33 nH,J ,1005 ,R/TP ,		
6	L510	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	L511	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	M201	IC	EUSY0239102	6.9 * 7.9 * 1.5 mm ,28 PIN,R/TP ,Bluetooth Module v1.2, 26MHz, For GSM		
6	Q100	TR,FET,P-CHANNEL	EQFP0004201	2.9*1.9*0.8(t) ,.7 W,20 V,-6 A,R/TP ,NDC652P upgrade(substitution) item, Pb free		
6	Q300	TR,BJT,ARRAY	EQBA0002701	EMT6 ,150 mW,R/TP ,NPN, PNP, 150 mA		
6	Q301	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
6	Q401	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
6	Q402	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,.29 W,1.8 V,.86 A,R/TP ,P-Chanel MOSFET, Pb free		
6	R101	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R102	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R103	RES,CHIP	ERHY0000225	200 ohm,1/16W,J,1005,R/TP		
6	R104	RES,CHIP	ERHY0001102	0.2 ohm,1/4W ,F ,2012 ,R/TP		
6	R105	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
6	R106	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
6	R107	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R108	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R109	RES,CHIP	ERHY0000152	82K ohm,1/16W,F,1005,R/TP		
6	R110	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R111	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R112	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R113	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R201	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R202	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R203	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R204	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R205	RES,CHIP	ERHY0000262	12K ohm,1/16W,J,1005,R/TP		
6	R206	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
6	R208	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R209	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R210	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
6	R211	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R212	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R213	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
6	R214	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R216	RES,CHIP	ERHY0000291	330K ohm,1/16W,J,1005,R/TP		
6	R217	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
6	R218	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000757	15 ohm,1/10W ,J ,1608 ,R/TP		
6	R221	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
6	R222	RES,CHIP	ERHY0000401	0 ohm,1/16W,J,1608,R/TP		
6	R223	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R229	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R230	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R231	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R232	RES,CHIP	ERHY0000131	20K ohm,1/16W,F,1005,R/TP		
6	R233	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R234	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R235	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R236	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R237	RES,CHIP	ERHY0000267	24K ohm,1/16W,J,1005,R/TP		
6	R238	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R239	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R240	RES,CHIP	ERHY0000152	82K ohm,1/16W,F,1005,R/TP		
6	R241	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
6	R301	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R302	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R311	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R313	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R315	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R317	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R318	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R319	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R320	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R321	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R322	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R323	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R324	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R326	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R327	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R329	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R330	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R331	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R332	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R333	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R334	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R335	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R336	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R337	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
6	R338	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R339	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R340	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R341	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R342	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R343	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R344	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R359	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
6	R360	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R361	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R362	RES,CHIP	ERHY0000262	12K ohm,1/16W,J,1005,R/TP		
6	R363	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
6	R364	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
6	R365	RES,CHIP	ERHY0000262	12K ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R366	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
6	R367	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
6	R368	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R369	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R370	RES,CHIP	ERHY0000226	220 ohm,1/16W,J,1005,R/TP		
6	R371	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R372	RES,CHIP	ERHY0000258	7.5K ohm,1/16W,J,1005,R/TP		
6	R373	RES,CHIP	ERHY0000229	300 ohm,1/16W,J,1005,R/TP		
6	R374	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R375	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R402	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R403	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R404	RES,CHIP	ERHY0000208	22 ohm,1/16W,J,1005,R/TP		
6	R405	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R406	RES,CHIP	ERHY0000258	7.5K ohm,1/16W,J,1005,R/TP		
6	R407	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R408	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R499	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R501	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R502	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R503	RES,CHIP,MAKER	ERHZ0000469	36 ohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
6	R505	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
6	R506	RES,CHIP	ERHY0000210	30 ohm,1/16W,J,1005,R/TP		
6	R507	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
6	R508	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
6	R509	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R510	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R511	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R601	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R602	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R603	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R604	RES,CHIP	ERHY0000233	470 ohm,1/16W,J,1005,R/TP		
6	R605	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R606	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R607	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R608	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R609	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R610	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	SW500	CONN,RF SWITCH	ENWY0002201	ANGLE ,SMD ,0.8 dB,		
6	U101	IC	EUSY0181502	CSP BGA ,204 PIN,R/TP ,GSM/GPRS DIGITAL BASEBAND PROCESSOR / ART7TDMI DSP, Pb Free		
6	U102	IC	EUSY0169301	148-TERMINAL BGA ,148 PIN,R/TP ,GSM ANALOG BASEBAND / TYPHOON B, Pb Free		
6	U201	IC	EUSY0204801	SC82-AB (SC70-4) ,4 PIN,R/TP ,80mA CMOS LOW IQ LDO VOLTAGE REGULATOR / 2.5V		
6	U202	IC	EUSY0077701	SC70-5 ,5 PIN,R/TP ,1.8V Low Voltage Comparator with Rail-to-Rail Input, Pb Free		
6	U203	IC	EUSY0119002	4X3 UCSP / CODE : B12-4 ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES(Pb Free)		
6	U204	IC	EUSY0223002	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V		
6	U205	IC	EUSY0227901	SON5-P-0.35(fSV) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free		
6	U206	IC	EUSY0163901	uCSP ,10 PIN,R/TP ,Dual Analog Switch, 300MHz Bandwidth		
6	U207	IC	EUSY0111601	32-PIN QFN ,32 PIN,R/TP ,MA-3 / 40 TONES / FM + WAVEFORM TABLE		
6	U302	IC	EUSY0206101	80-ACTIVE BALL STACKED CSP ,88 PIN,R/TP ,128 MLC NOR (L30 : TYAX) / 64-PSRAM / PB FREE		
6	U401	IC	EUSY0240501	6.2*7.2, SCSP ,96 PIN,R/TP ,CAMERA BACK END CHIP		
6	U402	IC	EUSY0145902	SOT23-5 ,5 PIN,R/TP ,300mA, 2.85V,LDO		
6	U404	IC	EUSY0245401	DFN ,16 PIN,R/TP ,Main 3 LEDs(60mA) + Flash (300mA) Charge pump		
6	U501	PAM	SMPY0007201	35 dBm,53 %,0.8 A,-50 dBc,50 dB,6.0*8.0*1.2 ,SMD ,QUAD		
6	U503	IC	EUSY0118602	SOT23 ,5 PIN,R/TP ,2.85V/150mA Low Noise uCap LDO Regulator, PBFREE		
6	U505	IC	EUSY0161301	8x8 LGA ,28 PIN,R/TP ,		
6	VA204	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR, Pb Free		
6	VA305	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR, Pb Free		
6	VA306	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
6	VA309	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR, Pb Free		
6	X101	X-TAL	EXXY0015601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	X500	VCTCXO	EXSK0005002	26 MHz,1 PPM,10 pF,SMD ,3.2*2.5*1.1 ,		
5	SPFY00	PCB,MAIN	SPFY0117801	FR-4 ,1.0 mm,BUILD-UP 8 ,		
3	SNGF00	ANTENNA,GSM,FIXED	SNGF0006301	3.0 ,-2.0 dBd, ,EGSM+DCS, Intenna		1

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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### 12.3 Accessory

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
3	MHBY00	HANDSTRAP	MHBY0002101	T5100 RUSSV Square Coupling, Cow Leather	Metal Silver	
3	SBPL00	BATTERY PACK,LI-ION	SBPL0076308	3.7 V,1000 mAh,1 CELL,PRISMATIC ,GC200(K-PJT) BATTERY, 523450 INNERPACK	Silver	
3	SGDY00	DATA CABLE	SGDY0004401	DK-20G, G7000 ,Cable bulk		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003204	L1200 ,MONO TYPE		
3	SSAD00	ADAPTOR,AC-DC	SSAD0007837	FREE ,50 Hz,5.2 V,800 mA,CE,CB ,		